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ABSTRACT

This teacher's manual provides general and specific guidelines for use of Teams-Games-Tournaments (TGT) Life Science Curriculum materials at the junior high-middle school level. TGT is an innovative instructional model which focuses on the learning of basic skills, information, and concepts, by rewarding students in small teams rather than at the individual level. The "games" component consists of a series of learning games; "tournaments" involve weekly sessions in which each student competes with other students of comparable achievement level on other teams; ultimately, individual scores are converted to team scores and winning teams are declared. The manual includes worksheets and gamesheets covering 47 learning objectives classified under these basic units: structure of matter, general equipment, life processes, genetics, health, ecology, and careers. (CS)

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Teachers' Manual:

Using Teams-Games-Tournament (TGT) in the Life Science Classroom

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Introduction

This manual provides general and specific guidelines for use of the Teams-Games-Tournament (TGT) Life Science Curriculum materials in the classroom. Part I discusses general issues; Part II provides specific information to enhance the use of the materials for each designated learning objective.

Life Science is part of the curriculum at the seventh- or eighth-grade level in most schools across the country. These materials were pilot-tested in both seventh- and eighth-grade life science classrooms.

Before using TGT Life Science, you should receive training in using the TGT process in the classroom. At the least, you should read and study the teacher's manual, Using Student Team Learning, especially the TGT sections, before attempting to use the process in your science classroom. Also, the materials can be used with the Student Teams-Achievement Division (STAD) process, simply by using the tournament gamesheets as quizzes.

Part I

General Issues

The Purpose of TGT Life Science

TGT should be used in the science classroom in accordance with its strengths--the learning and reinforcement of basic knowledge that will provide a base for further learning and experiences.

Science classrooms provide students with opportunities for meaningful experiences, which should in turn lead to further inquiry. However, students need a stable knowledge base or cognitive structure within their experience in order to proceed with manipulation and application of their learning. This basic philosophy of the use of TGT, when applied to the life science curriculum, has important implications. The materials focus on what TGT does best--the learning of basic skills, information, and concepts.

For example, the facile use of laboratory equipment is an important feature in science classrooms, but the basic knowledge required before facility--identification of equipment and knowledge of the functions of the equipment--can be taught and reinforced through TGT. Similarly, before students can analyze and integrate the concept of bodily support and movement, they must first learn parts of the skeletal system and their relationship to one another.

Another good example is vocabulary. Before vocabulary can be facilely applied, a basic level of knowledge of definitions must be assured and strengthened. Before nuances of meaning can be effectively dealt with, the student must acquire a definition that provides the base for the nuances. Vocabulary drawn from experience and reinforced through TGT will provide such a base.

There is no argument that the primary purpose of middle school-junior high school science programs must be to enable students to experience their world and develop the inquiry and investigative skills that they need to examine and understand that world. This purpose can be greatly facilitated, however, when students are able to develop a base of knowledge from which to launch their inquiry and investigation. The purpose of TGT science is to allow students to build that knowledge base successfully, especially students who may traditionally have difficulty in achieving academic success.

The Teams-Games-Tournament (TGT) Instructional Process

TGT is a classroom instructional process that changes the reward and task structures which surround a student in the classroom. The change in reward structure involves rewarding students as teams as well as individually. Task structure changes are created by having students perform cooperatively in their teams and then in small groups playing instructional games rather than in an isolated, individual setting.

The team structure leads students to encourage each other to learn academic material and to reinforce each other for successful performance, promoting greater learning. The game structure allows each student, regardless of past performance, to have a good chance to succeed at academic learning and to receive recognition for that success. The particular combination of structural changes used by TGT follows directly from research in both social psychology and instructional gaming.

TGT has three components: teams, games, and tournaments. The team component involves assigning students in a classroom to a series of four- or five-member teams. The students are assigned to create maximal heterogeneity within each team (in such dimensions as student academic achievement, race, and sex) and equality across teams. Team membership remains intact over time; within-team interaction and cohesion is fostered by frequently held team work sessions and by assigning teammates to adjacent seats. During team work sessions, the team members work together on worksheets that focus on specific learning objectives.

The games component consists of a series of instructional or learning gamesheets. This component consists of weekly (or even twice weekly) game-playing sessions, typically lasting 30 to 50 minutes, in which each student competes with two other students of comparable achievement level, representing other student teams. The instructional gamesheets used in the tournaments cover the same material (but only some of the actual items) that the students worked on together in their teams.

At the end of each tournament a "top-scorer," "middle scorer," and "low scorer" are declared for each three-person tournament table. The individual student scores are converted to team scores. The team scores are ranked and winning teams are declared. Public feedback is provided periodically through a newsletter which announces individual achievement but which stresses team performance. After each day's play, students are routinely reassigned to different tables for the next tournament based on recent performance, to ensure that all students retain a good chance of winning and thus remain motivated.

The manual accompanying the TGT Life Science materials, Using Student Team Learning, describes the TGT process more thoroughly and provides specific step-by-step instructions for implementing the process.

Development of TGT Life Science Materials

The development of these materials followed a model of previous development used for language arts and math materials--essentially, the identification of common and important learning objectives through multiple sources, followed by worksheet/gamesheet development for each objective, followed by formative evaluation of the materials conducted in science classrooms over a full school year. Full details of the development are contained in the final report on the project submitted to the National Science Foundation.

Difficulty Level of Materials

In general, the life science worksheets and gamesheets are above average in difficulty level--that is, they cover a good deal of information and do so on a more than elementary basis. Some worksheets and gamesheets, of course--depending upon the learning objective--are not as difficult as others.

You should not assume that a specific worksheet/gamesheet may be too difficult for your students. The pilot testing of these materials, and other previous testing of TGT materials, has shown that students working in cooperative teams are capable of learning information that they might not be able to learn, or motivated to learn, on their own.

At the same time, students with genuine reading difficulties will still face the problem of dealing with print materials. In this case, you can assign aides, teammates, or parent helpers to provide special assistance. During tournament sessions, you can spend extra time at the low-achiever tables with students who most need your help. In especially low-reading classrooms, you can revise and simplify the materials. Special education teachers have employed TGT science successfully by simplifying the worksheets and gamesheets.

Organization of Materials

TGT Life Science consists of worksheets and gamesheets covering 47 learning objectives. These objectives are classified under seven basic units:

- Structure of Matter
- General Equipment
- Life Processes
- Genetics
- Health
- Ecology
- Careers

The complete listing of objectives under each unit is contained in the Appendix of this manual.

Using TGT Life Science in the Classroom: General Issues

Part II of this manual provides specific information on using each of the TGT worksheet and gamesheet sets. There are, however, some general issues that you should be aware of as you implement the TGT process and materials in your classroom.

1) Schedule of usage. There is no specifically prescribed schedule for using TGT. A typical weekly schedule consists of, for each learning objective, regular instruction by the teacher on Monday, Tuesday, and Wednesday, team practice on Thursday, and tournament play on Friday. Essentially, you select the learning objective to be concentrated on, you teach that objective through regular classroom instruction for the first three days of the week, the students then have a team practice session on Thursday, and the tournament on Friday. The next Monday, you introduce another learning objective and follow the weekly schedule again.

This schedule will vary according to the difficulty of the learning objectives, the ability level of the students, and how much teacher instruction is required to provide information about the objective. For example, the information required for students to learn objective I. 2 (Identification of the names and symbols of common elements) is contained wholly within the worksheets and gamesheets, so little preliminary teacher instruction would be needed. The objective could be covered in two classroom periods only--one for the team practice and one for the tournament. On the other hand, to cover objective III.7.2 (Learning the circulation process in the human heart), the students may need three to five classroom periods of instruction and modeling before going into the team practice and tournament periods.

Thus, the average weekly schedule will vary accordingly to your assessment of how much preparation your students require before entering the team practice and tournament. Remember, however, that the team practice is a learning period, and students will learn the worksheet information in their teams. They should be sufficiently prepared to be able to learn the worksheet information, but not so thoroughly instructed in it beforehand that it is simply review.

Another aspect of scheduling is the problem of holidays and school events. Most teachers like to run team practice on Thursday and the tournament on Friday. During the school year, however, a lot of Thursdays and Fridays get cancelled out by holidays and school events. During such a week, you may select a relatively easy objective--one that can be covered through instruction on Monday, team practice on Tuesday, and tournament on Wednesday. Or you may select a difficult objective and use a two-week period that includes the holiday to cover it thoroughly. In essence, TGT is flexible--you need to allow a period for team practice and a period for the tournament, but the length of the instructional time beforehand is up to you.

Also involved with scheduling is the presentation of vocabulary. Each learning objective includes vocabulary that students need to learn. This information is generally provided by the teacher at the beginning of each learning objective.

2)Selection of objectives. The 47 learning objectives covered by TGT Life Science are presented in logical sequential order under each unit and should correlate very well with your present curriculum--that is, you are probably already teaching most or all of these objectives right now.

Your selection of which TGT materials to use will depend upon how extensively you want to use TGT in your classroom. You may, for example, select eight consecutive objectives in the Life Processes unit that match your current objectives and use the TGT process with only those eight. On the other hand, you may want to select enough objectives in each unit to be able to use TGT, off and on, throughout the entire school year. In essence, your needs will determine how much use you make of the materials. You may choose to use them extensively or use them only occasionally to cover specific objectives that are not as well covered by other materials or methods of instruction.

In your determination of their use, you should remember that, although TGT may effectively teach basic information and motivate students to learn basic information, the process and materials provide no hands-on experience or conscious development of inquiry skills. TGT focuses primarily on the knowledge objectives level of Bloom's hierarchy. Some suggestions are made in the specific issues portion of this manual for incorporating experimental and inquiry skill development, but the basic academic purpose of TGT is to enhance the learning of knowledge objectives.

In line with this, it would probably be possible to begin the year with Unit I, Objective 1.1 of the TGT materials and go right through the year with TGT and cover a large number of objectives. Students exposed to this schedule would probably show very high scores on standardized and criterion referenced knowledge tests. This would, however, be a misuse of TGT Life Science. Students learn basic information very well in TGT, but their learning of information must be viewed as providing a base in life science for the important further development of inquiry skills.

3) Grading. The use of TGT should not change the way that you assign grades in your classroom. You should not grade students on how well they do in their tournament, nor should you give a team grade based on how well the team performs. Your grades should be based on the standard measures that you already use--quiz and test scores, preparation of assignments, and so on. As students are involved in TGT, you should see higher achievement for the class as a whole and for low achievers especially, on quiz and test scores.

In the STAD team learning process, which can be used with the TGT life science materials, grading can be based on the actual results of the quiz that is given each week. The STAD process is included in the Using Student Team Learning teacher's manual.

Using TGT Science in the Classroom: General Procedures for Each Objective

Teacher judgment plays a large role in the successful use of TGT science, but the following general guidelines will help you organize your instruction.

For each set of worksheets/gamesheets covering each objective, you should:

1. Examine the worksheet/gamesheet materials to see how much information is provided about the objective and how much you will need to provide in your instruction. TGT worksheets do not provide full instructional materials, but are designed to be used with your textbooks, other printouts, and so on. Determine how many periods you will need to devote to instruction and set up your team practice and tournament to follow those periods.

2. As part of your instruction, be sure to present and cover vocabulary definition and usage, especially the vocabulary that is listed on the worksheet. The extent of your coverage should be based on how thoroughly the worksheets/gamesheets cover the vocabulary. The more thoroughly the vocabulary is covered in the worksheets, the less instruction you need to devote to it. However, vocabulary should be covered experientially, not simply as a set of definitions. For example, students need to learn definitions for terms such as cell wall, mitosis, voluntary muscles, and pollination in order to verbalize or write out their conceptions of these terms, but the conception itself must be based on experience with the qualities of these structures or processes.

3. In your instruction preceding the team practice and tournament, include as many experimental and experiential activities as possible. Remember that the team practice and tournaments are devoted to learning of basic skills and information.

4. In team practice sessions, encourage students to use extra resources, such as models, manipulables, diagrams, charts, and textbooks. You can provide resources to each team or set up a central area of resources that teams can take turns using.

5. Students should be made aware and kept aware that, in science as in life, objective answers to objective questions do not always cover all the possible nuances of a situation. Essentially, an objective answer or statement provides a handle for grasping and examining a concept but does not necessarily fully describe nor explain that concept. For example, a definition of photosynthesis may be short and specific and very useful, but such a definition cannot begin to convey the true complexity of the process. Along the same lines, we can define what an enzyme is in brief, specific terms, and use this defintion in writing and verbalizing about digestion, but the definition does not fully cover all the known aspects of enzymes and their relationship to the digestive process. In essence, students need to learn that objective statements of qualities, concepts, and processes are necessary and useful in order to gain a preliminary understanding, but the preliminary understanding can be deepened and enhanced through inquiry, observation and experience.

Part II

Special Issues

This part of the manual provides more specific information for coordinating the use of TGT and your usual instruction or classroom procedures. This information is based on observation of the use of these specific materials in classrooms and the suggestions of teachers who have used the materials. You need not apply all or any of the following suggestions; however you may find many of them helpful as you implement TGT in the life science classroom.

Objective		
I.1	Structure of Matter Vocabulary	Requires pre-instruction on the nature of matter; specifically conceptual development of the structures of matter and classification systems of matter. This objective may also be used at the end of the unit as a review.
I.2	Chemical Elements and Symbols	Little or no pre-instruction required once students have mastered the concept of "element."
I.3	Elements, Compounds and Mixtures	Classification experience with various substances should be provided.
II	Laboratory Equipment	Students should have some direct experience with some or all of the equipment before worksheets and gamesheets are used. Also, instead of using the worksheet for team practice, equipment can be set up thoughout the room and students can work in their teams to identify each piece.
II.2	Compound Microscope	Teacher may use a chart with a diagram of a microscope like the one provided in the gamesheets and worksheets to develop necessary vocabulary and discuss the functions of the microscope components.
III.1	Summary of Life Processes	Requires pre-instruction on the nature of life processes and vocabulary development.
III.2	Cell Structure and Function	Requires pre-instruction on cell structure and function.

III.3	Levels of Organization	Requires pre-instruction on the conceptual relationship between the various levels of organization and requires vocabulary development.
III.4.1	Classifying Living Things: Plants	Requires laboratory classification experience with plants.
III.4.2.1	Classifying Living Things: Animals (I)	Requires pre-instruction on classification of animals through lab experiences, classification systems and requires vocabulary development.
III.4.2.2	Classifying Living Things: Animals (II)	Requires little or no pre-instruction. Primarily an extension of III.4.2.1.
III.5.1	Food Making: Leaf Structure	Requires lecture/lab experiences on function and structure of lead.
III.5.2	Food Making: Photosynthesis	Requires conceptual development on the process of photosyntehsis.
III.5.3	Food Making: Edible Plant Parts	Requires little or no pre-instruction.
III.6.1	Digestion: The Digestive System	Classroom models and charts of the human digestive system as well as films or filmstrips should be used to develop concepts and vocabulary.
III.6.2	Digestion: Chemical Digestion	Students should receive instruction on nutrients, steps in the digestive process and methods by which cells absorb nutrients.
III.7.1	Transport in Living Things: Plants	Students should receive lecture/lab experiences to develop necessary concepts and vocabulary.
III.7.2	Transport in Living Things: The Heart	Requires little or no pre-instruction. Text included in the worksheet. However, a model or chart of human heart may be used prior to team practice.
III.7.3	Transport in Living Things: The Blood	Requires concept and vocabulary development.

III.8.1	Breathing and Respiration: Exchanging Gases	Requires short pre-instruction priod to provide students with examples of the five ways of exchanging oxygen and carbon dioxide.
III.8.2	Breathing and Respiration: The Respiratory System	Requires teacher to contrast breathing and respiration in human beings and develop "structure and function" vocabulary.
III.9	Waste Regulation and Excretion	Requires pre-instruction on the function, structure and methods of excretion in humans.
III.10.1	Control Systems: Neurons and Reflexes	Requires pre-instruction on the function of three types of neurons, stimulus-response theory and requires vocabulary development.
III.10.2	Control Systems: The Nervous System	Models, charts, films, filmstrips may be used to develop concepts of nervous system function and dysfunction and vocabulary.
III.10.3	Control Systems: Ductless Glands	Pre-instruction on the ductless glands, hormones and functions. Charts and diagrams are included in worksheet.
III.10.4	Control Systems: The Sense Organs	Pre-instruction as to the structure and function of sense organs.
III.11.1	Support and Movement: The Human Skeleton	Requires vocabulary development. Diagrams of human skeleton and types of joints are included in the worksheet.
III.11.2	Support and Movement: Muscles	Requires pre-instruction on types of muscles through models and diagrams and lecture on muscle-related diseases.
III.12.1	Reproduction: Cell Division	Requires pre-instruction on the nature of cell division and requires vocabulary development.
III.12.2	Reproduction: Asexual Reproduction	Requires pre-instruction on the nature of asexual reproduction.

III.12.3.1	Reproduction: Plant Sexual Reproduction	Requires pre-instruction on plant part functions and nature of plant reproduction through diagrams and lab experiences.
III.12.3.2a	Reproduction: Sexual Reproduction Vocabulary Review	Requires little or no pre-instruction if students can pronounce vocabulary words.
III.12.3.2b	Reproduction: Vertebrate Sexual Reproduction	Requires pre-instruction on methods of vertebrate sexual reproduction.
IV.1	Genetics Vocabulary	Requires that students be able to pronounce vocabulary. Some teachers may wish to use this objective at the end of the Genetics unit.
IV.2	Dominance and Recession	Requires pre-instruction on the nature of dominance and recession.
IV.3	Incomplete Dominance	Requires pre-instruction on the nature of incomplete dominance.
V.1	Nutrient Sources and Functions	Requires pre-instruction on the nature of nutrient sources and functions, vocabulary development, and the Basic Four Food Groups.
V.2.1	Infectious Diseases	Requires little or no pre-instruction.
V.2.2	Non-infectious Diseases	Requires pre-instruction discriminating the types of non-infectious diseases.
VI.1.1	Community Relationships	Requires pre-instruction on the relationship of communities within an ecosystem.
VI.1.2	Communities: Biomes of North America	Requires vocabulary development.
VI.2.1	Food Webs	Requires pre-instruction on the nature of food chains and food webs and the three orders of producers and consumers.
VI.2.2	Interactions in the Ecosystem	Requires vocabulary development.
VI.3.1	Identifying Elements of Cycles	Requires little or no pre-instruction; however some teachers may wish to demonstrate the cycle processes.

VI.3.2	Cycle Processes	Requires vocabulary development.
VII.1	Biology Related Careers	Requires little or no pre-instruction.
VII.2	Health Careers	Requires little or no pre-instruction.

Appendix

TGT Life Science Learning Objectives

TGT Life Science Objectives

The TGT Life Science curriculum materials consist of forty seven sets of worksheets and gamesheets that cover specific learning objectives. These objectives are classified under seven basic units: The Structure of Matter, General Equipment, Life Processes, Genetics, Health, Ecology, and Careers.

I. The Structure of Matter
  I.1 - Vocabulary
    Students will define and match the definitions of terms associated with matter, and will classify various forms of matter.
  I.2 - Chemical Elements and Symbols
    Students will identify the names of common elements and their symbols.
  I.3 - Elements, Compounds and Mixtures
    Students will classify substances as elements, compounds, or mixtures.

II. General Equipment
  II.1 - Laboratory Equipment
    Students will identify equipment used in science experiments.
  II.2 - Compound Microscope
    Students will identify the structure and function of parts of a "typical" compound microscope.

III. Life Processes
  III.1 - Summary of Life Processes
    Students will identify the definitions associated with the activities of living things, and will identify life processes using real situations.
  III.2 - Cell Structure and Function
    Students will identify the parts and functions of a typical plant cell and animal cell, and compare a typical plant and animal cell.
  III.3 - Levels of Organization
    Students will identify tissues, organs, and systems of an organism.
  III.4 - Classifying Living Things
    III.4.1 - Plant Classification
      Students will classify each plant given according to specific characteristics.
    III.4.2 - Animal Classification
      III.4.2.1 - Students will classify each animal organism according to specific characteristics.
      III.4.2.2 - Students will identify each organism from its description.
  III.5 - Food Making
    III.5.1 - Leaf Structure
      Students will identify the structures and function of a typical leaf.

- III.5.2 - Photosynthesis
  Students will identify the steps in the food making process, and will compare the light and dark phases of photosynthesis.
- III.5.3 - Edible Plant Parts
  Students will classify food or beverage sources as the edible parts of flowering plants.

- III.6 - Digestion
  - III.6.1 - The Digestive System
    Students will identify the organs of a typical drawing of the human digestive system and recognize their functions.
  - III.6.2 - Chemical Digestion
    Students will identify (1) the types of nutrients present in a meal, (2) where each step of digestion takes place and the digestive juices that act upon proteins, fats, and carbohydrates, and (3) the end products of protein, fat and carbohydrate digestion and the ways in which they are carried to and absorbed by the body cells.
- III.7 - Transport in Living Things
  - III.7.1 - Plant Transport
    Students will identify the major function of each plant organ and the structure and function of the two main parts of a plant's transport system, and will compare vascular systems of a woody plant and an herb (herbaceous) plant.
  - III.7.2 - The Heart
    Students will identify the parts of the heart and their function in the circulatory system, and will trace the circulation of blood by listing the parts of the heart in sequence.
  - III.7.3 - The Blood
    Students will identify the parts of the blood and the function of each part, and various blood disorders from their descriptions.
- III.8 - Breathing and Respiration
  - III.8.1 - Exchanging Gases
    Students will match organisms with their method of exchanging oxygen and carbon dioxide.
  - III.8.2 - The Respiratory System
    Students will identify the parts of the human respiratory system and the function of each part, and will distinguish between respiration and breathing.
- III.9 - Waste Regulation and Excretion
  Students will identify the structure and function of the organs associated with waste regulation and excretion, and will identify metabolic wastes and how organisms get rid of them.
- III.10 - Control Systems
  - III.10.1 - Neurons and Reflexes
    Students will identify the function and location of three types of neurons, and will distinguish between stimuli and responses.

- III.10.2 - The Nervous System
  Students will identify the parts and functions of the brain, distinguish between the parts and the functions of the central and peripheral nervous system, and identify diseases or disorders of the nervous system.
- III.10.3 - Ductless Glands
  Students will identify the location and function of ductless glands, and will identify the gland responsible for certain described conditions or situations.
- III.10.4 - The Sense Organs
  Students will identify the functions of the sense organs, and the structure and function of the eye and ear.

III.11 - Support and Movement

- III.11.1 - Human Skeleton
  Students will identify bones that protect vital organs, identify and give examples of major types of joints, and identify the structure and composition of bones.
- III.11.2 - Muscles
  Students will identify and compare the structure and function of three types of muscles, compare voluntary and involuntary muscles, identify muscles that bend and extend joints in the arm, and identify diseases or disorders associated with muscles.

III.12 - Reproduction

- III.12.1 - Cell Division
  Students will identify the major phases of mitosis, and will identify the major parts of a cell involved in cell division.
- III.12.2 - Asexual Reproduction
  Students will distinguish among five methods of asexual reproduction, and will identify organisms that reproduce asexually.
- III.12.3 - Sexual Reproduction
  - III.12.3.1 - Plants
    Students will identify the parts and function of each part of a flower, and will distinguish between pollination and fertilization.
  - III.12.3.2 - Vertebrates
    a) Students will define terms or symbols associated with the sexual reproduction unit, and will match the vocabulary terms or symbols with their definitions or descriptions
    b) Students will classify vertebrates according to the method by which the egg is fertilized, the embryo is developed, and the method by which vertebrates care for their young.

IV. Genetics

IV.1 - Genetics Vocabulary

Students will define terms associated with genetics, and will select the trait or method of breeding that fits each group of words.

IV.2 - Dominance and Recession

Students will identify and compare dominant traits and recessive traits which Mendel observed in pea plants, and will compute a problem showing the possible gene combinations from a cross between two organisms.

IV.3 - Incomplete Dominance

Students will interpret information and solve problems about incomplete dominance in organisms.

V. Health

V.1 - Nutrient Sources and Functions

Students will be able to (1) identify food sources of the major nutrients, (2) name deficiency diseases associated with vitamin deficiencies (A, B complex, D, K, C), (3) identify the functions of major nutrients, (4) name the Basic Four Food Groups, and (5) name foods contained in each of the Basic Four Food Groups.

V.2 - Diseases

V.2.1 - Infectious Diseases

Students will state the microorganisms that cause infectious diseases and the ways in which these diseases spread to humans.

V.2.2 - Noninfectious Diseases

Students will classify various types of noninfectious diseases.

VI. Ecology

VI.1 - Communities

VI.1.1 - Community Relationships

Students will define vocabulary terms associated with the relationships in a natural community and a natural ecosystem, identify and give examples of various relationships within a natural community and a natural ecosystem, and identify and give examples of various factors which control populations and communities in an ecosystem.

VI.1.2 - Biomes of North America

Students will identify the conditions and organisms which can be found in certain biomes.

VI.2 - Ecosystems

VI.2.1 - Food Webs

Students will define producers, consumers, decomposers, food chains and food webs, and will distinguish among first-order, second-order, and third-order consumers and producers.

VI.2.2 - Interactions in the Ecosystem

Students will identify harmful and/or helpful interactions in the ecosystem.

- VI.3 - Recycling Matter
    - VI.3.1 - Identifying Elements of Cycles
      Students will identify the cycle to which each process is most closely related.
    - VI.3.2 - Cycle Processes
      Students will interpret information about the process involved in the water cycle, the carbon dioxide-oxygen cycle, and the nitrogen cycle.

VII. Careers in Life Science

- VII.1 - Biology-Related Careers
  Students will identify various biology-related careers from a brief description and/or the minimum training requirements.
- VII.2 - Health Careers
  Students will identify health occupations from a brief description and/or the minimum training requirements.

TGT LIFE SCIENCE

UNIT: The Structure of Matter

WORKSHEET: Vocabulary

Objective: I.1--a. Students will define and match the definitions of terms associated with matter.

b. Students will classify various forms of matter.

Instructions: This worksheet will help you prepare for the Structure of Matter Vocabulary Game. You will define each vocabulary term. For items 1-25, give the vocabulary word that fits the definition or description. For items 26-37, choose the answer which best matches each definition.

Vocabulary:

atom
chemical change
chemical equation
chemical formula
chemical symbol
compound
colloid
element
energy
gas
inorganic matter
liquid
mass
matter
mixture
molecule
organic matter
physical change
solid
solute
solution
solvent
suspension
weight

TGT WORKSHEET: 1.1 Structure of Matter Vocabulary

Anything that has mass and takes up space. 1	The smallest particle of a substance still having the chemical properties of that substance. 2	One or more letters that represent an element. 3
Any substance that is living or was once part of a living organism. 4	A mixture formed by dissolving a solute in a solvent. 5	A substance that cannot be broken down into a simpler substance. 6
A change in size, shape, or form without a change in composition. 7	The smallest particle of an element that has the properties of that element. 8	Two or more substances that combine physically. 9
The ability to produce motion and cause change. 10	A substance composed of two or more elements. 11	A combination of symbols and numbers to show the chemical composition of a compound. 12
A change that results in a new substance. 13	A mixture with particles that settle out. 14	The three forms of matter. 15

TGT WORKSHEET: I.1 Structure of Matter Vocabulary

A type of suspension that does not separate on standing. 16	Matter that takes up a definite amount of space and has a definite shape. 17	Any material that is dissolved in a solution. 18
The amount of matter that makes up an object or organism. 19	A substance that was never a part of a living thing. 20	The liquid in which a solute dissolves. 21
Matter that takes up a definite amount of space, but has no definite shape. 22	The amount of gravitational attraction between two objects. 23	Matter that has neither a definite shape nor takes up a definite amount of space. 24
The combination of symbols and formulas which represents a chemical change. 25	Oil and vinegar, and cereal with raisins, are a. solutions b. suspensions c. compounds 26	H, Cl, Fe and O are a. chemical symbols b. chemical formulas c. chemical equations 27
Wood, steel, and apples are a. solids b. liquids c. gases 28	Breaking an egg and sharpening a pencil are examples of a. chemical changes b. physical changes c. inorganic matter 29	Air, water vapor, and carbon dioxide are a. solids b. liquids c. gases 30

TGT WORKSHEET: I.1 Structure of Matter Vocabulary

$2H_2O + O_2 \quad 2H_2O$ is a a. chemical symbol b. chemical formula c. chemical equation 31	Jello, mayonnaise and butter are a. solutions b. elements c. colloids 32	The souring of milk and the rusting of iron are a. chemical changes b. physical changes c. inorganic matter 33
Salt, rocks, and water are a. inorganic matter b. organic matter c. physical changes 34	H_2O, $C_6H_{12}O_6$, and CO_2 are a. chemical symbols b. chemical formulas c. chemical equations 35	Gasoline, sugar, and wood are a. inorganic matter b. chemical changes c. organic matter 36
Gold, lead, and silver are a. elements b. compounds c. mixtures 37		

WORKSHEET ANSWERS

I.1 Structure of Matter Vocabulary

1. matter
2. molecule
3. chemical symbol
4. organic matter
5. solution
6. element
7. physical change
8. atom
9. mixture
10. energy
11. compound
12. formula
13. chemical change
14. suspension
15. solid, liquid, gas
16. colloid
17. solid
18. solute
19. mass
20. inorganic matter
21. solvent
22. liquid
23. weight
24. gas
25. chemical equation
26. b) suspensions
27. a) chemical symbols
28. a) solids
29. b) physical changes
30. c) gases
31. c) chemical equation
32. c) colloids
33. a) chemical changes
34. a) inorganic matter
35. b) chemical formulas
36. c) organic matter
37. a) elements

TGT GAMESHEET: I.1 Structure of Matter Vocabulary

The amount of matter that makes up an object or organism. 1	A change that results in a new substance. 2	A substance that was never a part of a living thing. 3
Matter that has neither a definite shape nor takes up a definite amount of space. 4	Helium, water vapor, and air are a. solids b. liquids c. gases 5	Breaking glass and sawing wood are examples of a. chemical changes b. organic matter c. physical changes 6
A change in size, shape, or form without a change in composition. 7	The amount of gravitational attraction between two objects. 8	Milk, smoke, and gelatin are a. solutions b. compounds c. colloids 9
C, S, Al, and O are a. chemical equations b. chemical symbols c. chemical formulas 10	A mixture formed by dissolving a substance (solute) in another substance (the solvent). 11	Iron, pencils, and chairs are a. solids b. liquids c. gases 12
Tarnishing silver and digestion of food are examples of a. chemical changes b. organic matter c. physical changes 13	Coal, natural gas, and starch are a. organic matter b. physical changes c. inorganic matter 14	Anything that has mass and takes up space. 15

TGT GAMESHEET: I.1 Structure of Matter Vocabulary

Any substance that is living or was once part of a living organism.

16

Any material that is dissolved in a solution.

17

The ability to produce motion and cause changes.

18

$2Na + Cl_2 \rightarrow 2NaCl$ is a

a. chemical equation
b. chemical symbol
c. chemical formula

19

A type of syspension that does not separate on standing.

20

The smallest particle of a substance still having the chemical properties of that substance.

21

Muddy water, oil-based paint, and dust in the air are

a. compounds
b. suspensions
c. solutions

22

The smallest particle of an element that has the properties of that element.

23

A substance composed of two or more elements.

24

A mixture with particles that settle out.

25

H_2O, NaCl, and CO_2 are

a. chemical equations
b. chemical symbols
c. chemical formulas

26

A substance that cannot be broken down into a simpler substance.

27

Two or more substances that combine physically.

28

Glass, salt, and water are

a. organic matter
b. physical changes
c. inorganic matter

29

The three forms of matter.

30

GAMESHEET ANSWERS

I.1 Structure of Matter Vocabulary

1. mass
2. chemical change
3. inorganic matter
4. gas
5. c) gases
6. c) physical changes
7. physical change
8. weight
9. c) colloids
10. b) chemical symbols
11. solution
12. a) solids
13. a) chemical changes
14. a) organic matter
15. matter
16. organic matter
17. solute
18. energy
19. a) chemical equation
20. colloid
21. molecule
22. b) suspensions
23. atom
24. compound
25. suspension
26. c) chemical formulas
27. element
28. mixture
29. c) inorganic matter
30. solid, liquid, gas

TGT LIFE SCIENCE

UNIT: The Structure of Matter

WORKSHEET: Chemical Elements and Symbols

Objective: I.2--Students will identify the names of common elements and their symbols.

Instructions: This worksheet will help you prepare for the Element Symbol Game. If an item presents an element symbol, you state the name of the element. If an item presents an element name, you state the symbol for that element.

Vocabulary:

aluminum (Al)
calcium (Ca)
carbon (C)
chlorine (Cl)
copper (Cu)
fluorine (F)
gold (Au)
hydrogen (H)
iodine (I)
iron (Fe)
lead (Pb)
magnesium (Mg)
mercury (Hg)
nickel (Ni)
nitrogen (N)
oxygen (O)
phosphorus (P)
potassium (K)
silicon (Si)
silver (Ag)
sodium (Na)
sulfur (S)
tin (Sn)
zinc (Zn)

TGT WORKSHEET: I.2 Chemical Elements and Symbols

hydrogen __________ 1	O __________ 2	potassium __________ 3
sulfur __________ 4	Ca __________ 5	Fe __________ 6
I __________ 7	chlorine __________ 8	nitrogen __________ 9
carbon __________ 10	Na __________ 11	Mg __________ 12
phosphorus __________ 13	F __________ 14	aluminum __________ 15
copper __________ 16	Au __________ 17	Si __________ 18
tin __________ 19	Zn __________ 20	Ag __________ 21
mercury __________ 22	K __________ 23	calcium __________ 24
N __________ 25	lead __________ 26	sodium __________ 27
P __________ 28	magnesium __________ 29	Cl __________ 30

WORKSHEET ANSWERS

I.2 Chemical Elements and Symbols

1. H
2. oxygen
3. K
4. S
5. calcium
6. iron
7. iodine
8. Cl
9. N
10. C
11. sodium
12. magnesium
13. P
14. fluorine
15. Al
16. Cu
17. gold
18. silicon
19. Sn
20. zinc
21. silver
22. Hg
23. potassium
24. Ca
25. nitrogen
26. Pb
27. Na
28. phosphorus
29. Mg
30. chlorine

TGT GAMESHEET: I.2 Chemical Elements and Symbols

H ____________ 1	Mg ____________ 2	zinc ____________ 3
silicon ____________ 4	calcium ____________ 5	Fe ____________ 6
iodine ____________ 7	C ____________ 8	Ni ____________ 9
Ca ____________ 10	sodium ____________ 11	Hg ____________ 12
I ____________ 13	fluorine ____________ 14	Al ____________ 15
iron ____________ 16	Au ____________ 17	S ____________ 18
copper ____________ 19	K ____________ 20	silver ____________ 21
Pb ____________ 22	phosphorus ____________ 23	oxygen ____________ 24
nitrogen ____________ 25	chlorine ____________ 26	Sn ____________ 27
potassium ____________ 28	Na ____________ 29	Cu ____________ 30

GAMESHEET ANSWERS

I.2 Chemical Elements and Symbols

1. hydrogen
2. magnesium
3. Zn
4. Si
5. Ca
6. iron
7. I
8. carbon
9. nickel
10. calcium
11. Na
12. mercury
13. iodine
14. F
15. aluminum
16. Fe
17. gold
18. sulfur
19. Cu
20. potassium
21. Ag
22. lead
23. P
24. O
25. N
26. Cl
27. tin
28. K
29. sodium
30. copper

TGT LIFE SCIENCE

UNIT: The Structure of Matter

WORKSHEET: Elements, Compounds and Mixtures

Objective: I.3--Students will classify substances as elements, compounds, or mixtures.

Instructions: This worksheet will help you prepare for the Elements, Compounds and Mixtures Game. Choose the term that best classifies each item on the worksheet.

Vocabulary:

element
compound
mixture

TGT WORKSHEET: I.3 Elements, Compounds and Mixtures

oxygen element compound mixture 1	water element compound mixture 2	air element compound mixture 3
silver element compound mixture 4	salt element compound mixture 5	iron element compound mixture 6
sugar element compound mixture 7	milk element compound mixture 8	helium element compound mixture 9
baking soda element compound mixture 10	mercury element compound mixture 11	lemonade element compound mixture 12
tin element compound mixture 13	soup element compound mixture 14	salt water element compound mixture 15

TGT WORKSHEET: I.3 Elements, Compounds and Mixtures

carbon dioxide element compound mixture 16	calcium element compound mixture 17	pure alcohol element compound mixture 18
salad element compound mixture 19	chlorine element compound mixture 20	paint element compound mixture 21
starch element compound mixture 22	iodine element compound mixture 23	ink element compound mixture 24
sulfur element compound mixture 25	carbon element compound mixture 26	soil element compound mixture 27
vinegar element compound mixture 28	fog element compound mixture 29	mayonnaise element compound mixture 30

WORKSHEET ANSWERS

I.3 Elements, Compounds and Mixtures

1. element
2. compound
3. mixture
4. element
5. compound
6. element
7. compound
8. mixture
9. element
10. compound
11. element
12. mixture
13. element
14. mixture
15. mixture
16. compound
17. element
18. compound
19. mixture
20. element
21. mixture
22. compound
23. element
24. mixture
25. element
26. element
27. mixture
28. mixture
29. mixture
30. mixture

TGT GAMESHEET: I.3 Elements, Compounds and Mixtures

mayonnaise element compound mixture 1	soup element compound mixture 2	sulfur element compound mixture 3
vinegar element compound mixture 4	calcium element compound mixture 5	lemonade element compound mixture 6
sugar element compound mixture 7	iron element compound mixture 8	chlorine element compound mixture 9
baking soda element compound mixture 10	air element compound mixture 11	iodine element compound mixture 12
ink element compound mixture 13	helium element compound mixture 14	salad element compound mixture 15

TGT GAMESHEET: I.3 Elements, Compounds and Mixtures

carbon dioxide element compound mixture 16	silver element compound mixture 17	fog element compound mixture 18
tap water element compound mixture 19	salt element compound mixture 20	paint element compound mixture 21
salt water element compound mixture 22	pure alcohol element compound mixture 23	tin element compound mixture 24
water element compound mixture 25	carbon element compound mixture 26	soil element compound mixture 27
mercury element compound mixture 28	starch element compound mixture 29	oxygen element compound mixture 30

GAMESHEET ANSWERS

I.3 Elements, Compounds and Mixtures

1. mixture
2. mixture
3. element
4. mixture
5. element
6. mixture
7. compound
8. element
9. element
10. compound
11. mixture
12. element
13. mixture
14. element
15. mixture
16. compound
17. element
18. mixture
19. mixture
20. compound
21. mixture
22. mixture
23. compound
24. element
25. compound
26. element
27. mixture
28. element
29. compound
30. element

TGT LIFE SCIENCE

UNIT: General Equipment

WORKSHEET: Laboratory Equipment

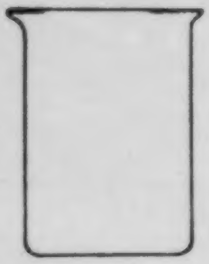
Objective: II.1--Students will identify equipment used in science experiments.

Instructions: This worksheet will help you prepare for the Laboratory Equipment Game. Study each diagram carefully. Fill in the blank with the name of the laboratory equipment shown in the diagram. Choose the names from the list below. You will need to memorize the names of the equipment. The list will not be provided for the tournament.

Vocabulary:

balance scale
beaker
bell jar
bunsen burner
evaporating dish
Erlenmeyer flask
Florence flask
funnel
gas collection bottle
glass plate
graduated cylinder
iron ring
magnifier
metric ruler
microscope
microscope slide and cover slip
medicine dropper (eye dropper)
mortal and pestle
reagent bottle
ring stand
ring stand clamp
test tube
test tube brush
test tube holder
test tube rack
thermometer
tongs
triangular file
tripod
watch glass
weights (set of masses)
wire gauze

TGT WORKSHEET: II.1 Laboratory Equipment



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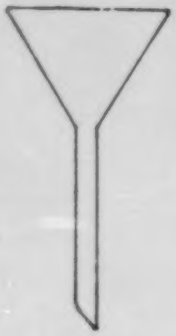

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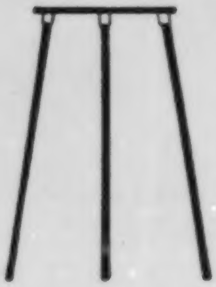

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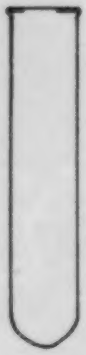

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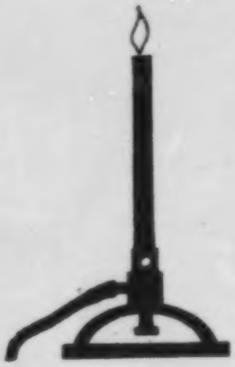

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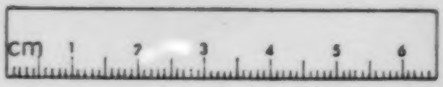

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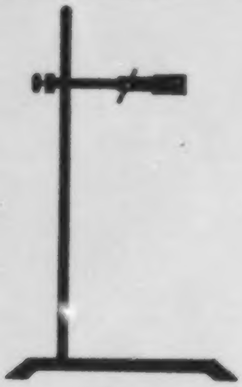

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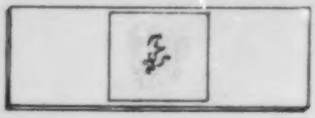

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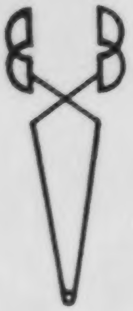

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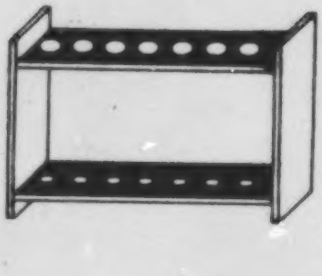

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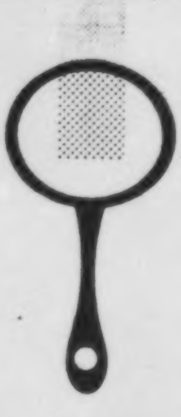

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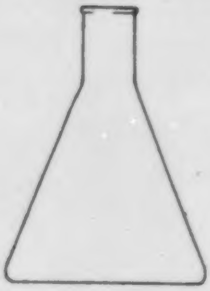

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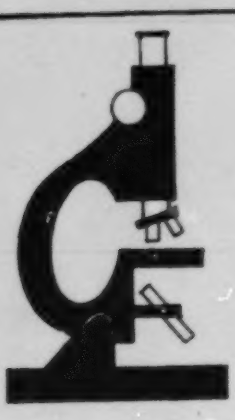
TGT WORKSHEET: II.1 Laboratory Equipment



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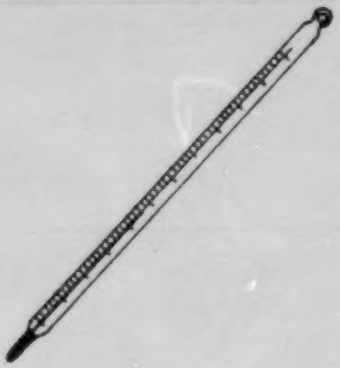

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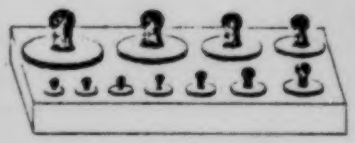

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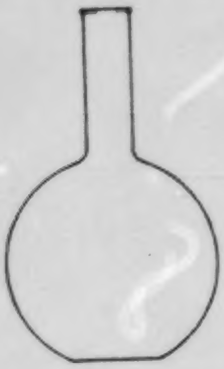

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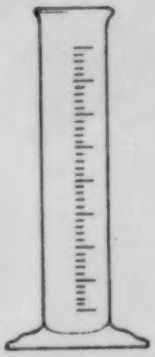

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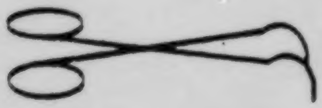

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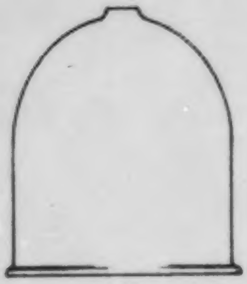

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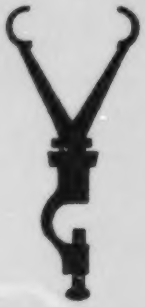

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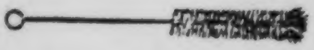

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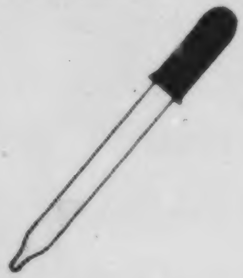

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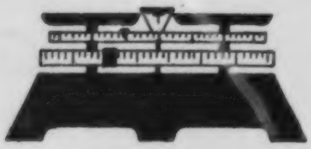

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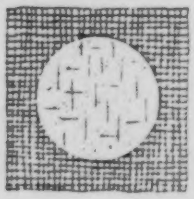

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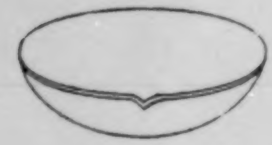
TGT WORKSHEET: II.1 Laboratory Equipment



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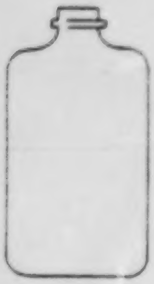

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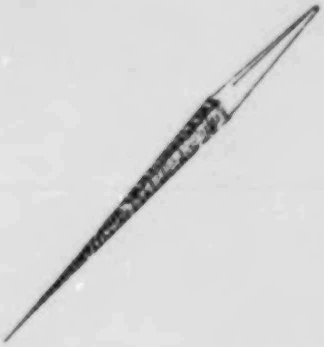

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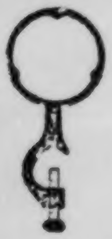

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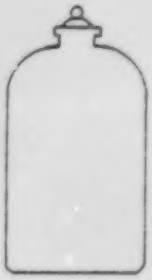

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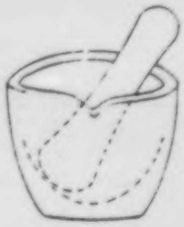

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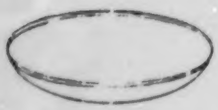

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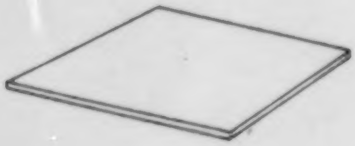

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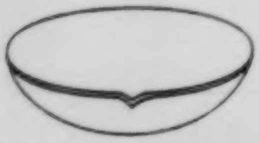
WORKSHEET ANSWERS

II.1 Laboratory Equipment

1. beaker
2. funnel
3. tripod
4. test tube
5. bunsen burner
6. metric ruler
7. ring stand
8. microscope slide and cover slip
9. test tube holder
10. test tube rack
11. magnifier
12. Erlenmeyer flask
13. microscope
14. thermometer
15. set of masses (weights)
16. Florence flask
17. graduated cylinder
18. tongs
19. bell jar
20. ring stand clamp
21. test tube brush
22. medicine dropper (eye dropper)
23. balance scale
24. wire gauze
25. evaporating dish
26. gas bottle
27. triangular file
28. iron ring
29. reagent bottle
30. mortar and pestle
31. watch glass
32. glass plate

TGT GAMESHEET: II.1 Laboratory Equipment



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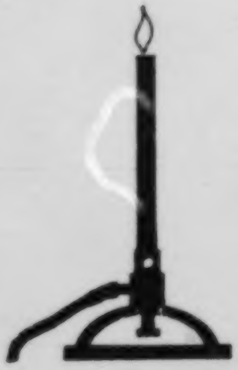

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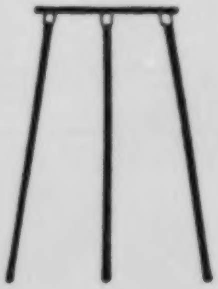

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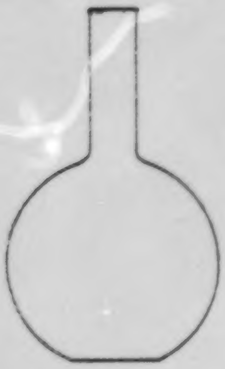

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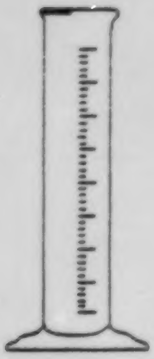

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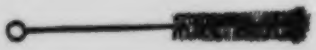

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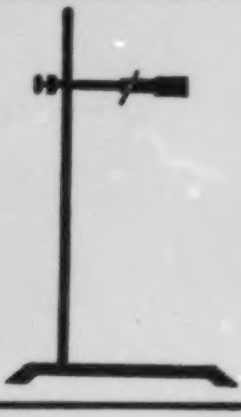

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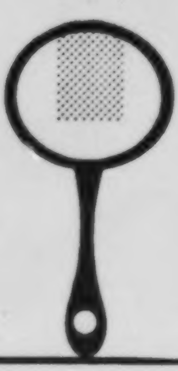

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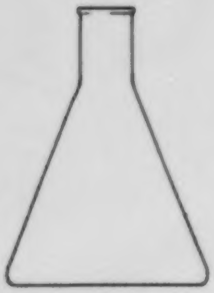

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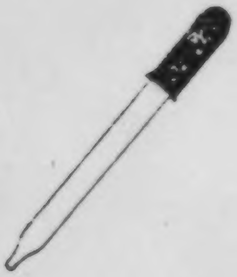

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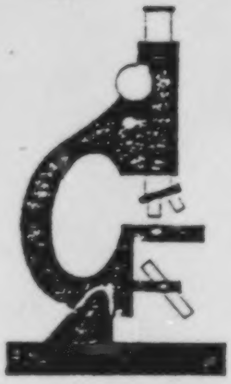

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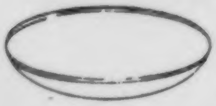

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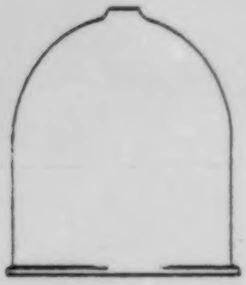
TGT GAMESHEET: II.1 Laboratory Equipment



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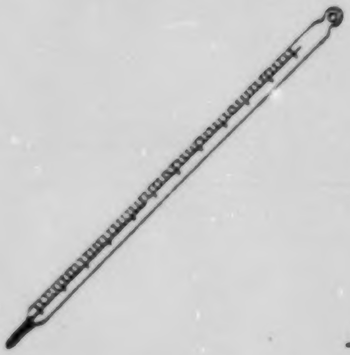

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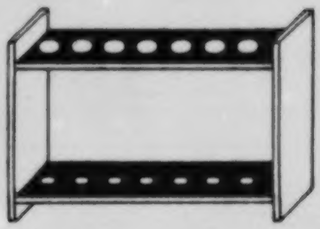

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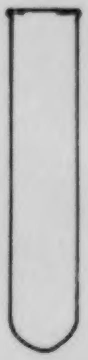

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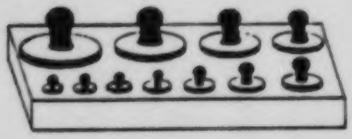

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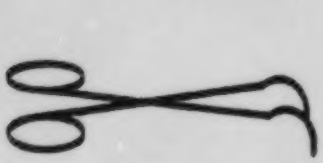

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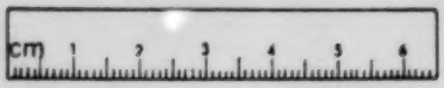

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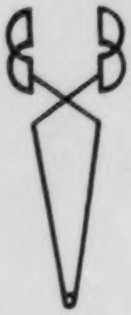

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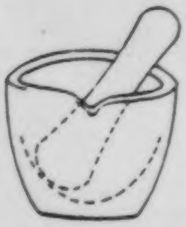

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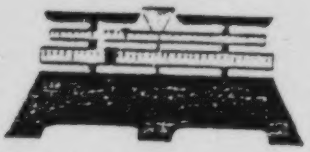

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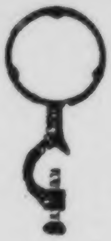

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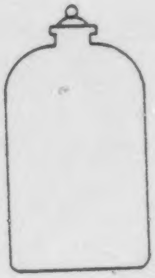
TGT GAMESHEET: II.1 Laboratory Equipment



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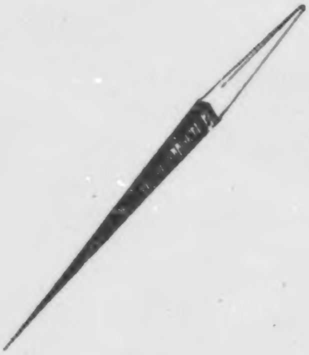

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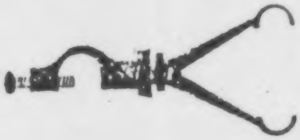

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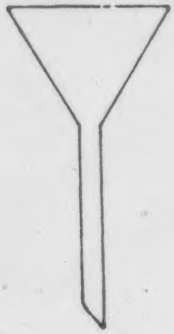

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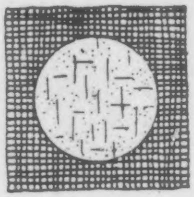

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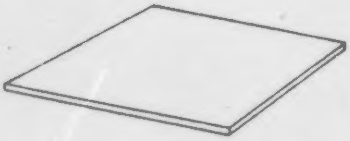

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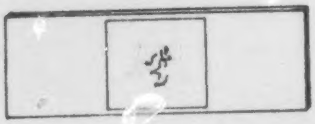

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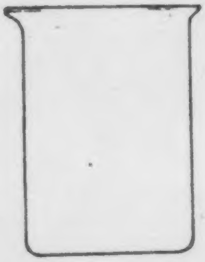

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GAMESHEET ANSWERS

II.1 Laboratory Equipment

1. evaporating dish
2. bunsen burner
3. tripod
4. Florence flask
5. graduated cylinder
6. test tube brush
7. ring stand
8. magnifier
9. Erlenmeyer flask
10. medicine dropper (eye dropper)
11. microscope
12. watch glass
13. bell jar
14. thermometer
15. test tube rack
16. test tube
17. set of masses (weights)
18. gas collection bottle
19. tongs
20. metric ruler
21. test tube holder
22. mortar and pestle
23. balance scale
24. iron ring
25. reagent bottle
26. triangular file
27. ring stand clamp
28. funnel
29. wire gauze
30. glass plate
31. microscope slide and cover slip
32. beaker

TGT LIFE SCIENCE

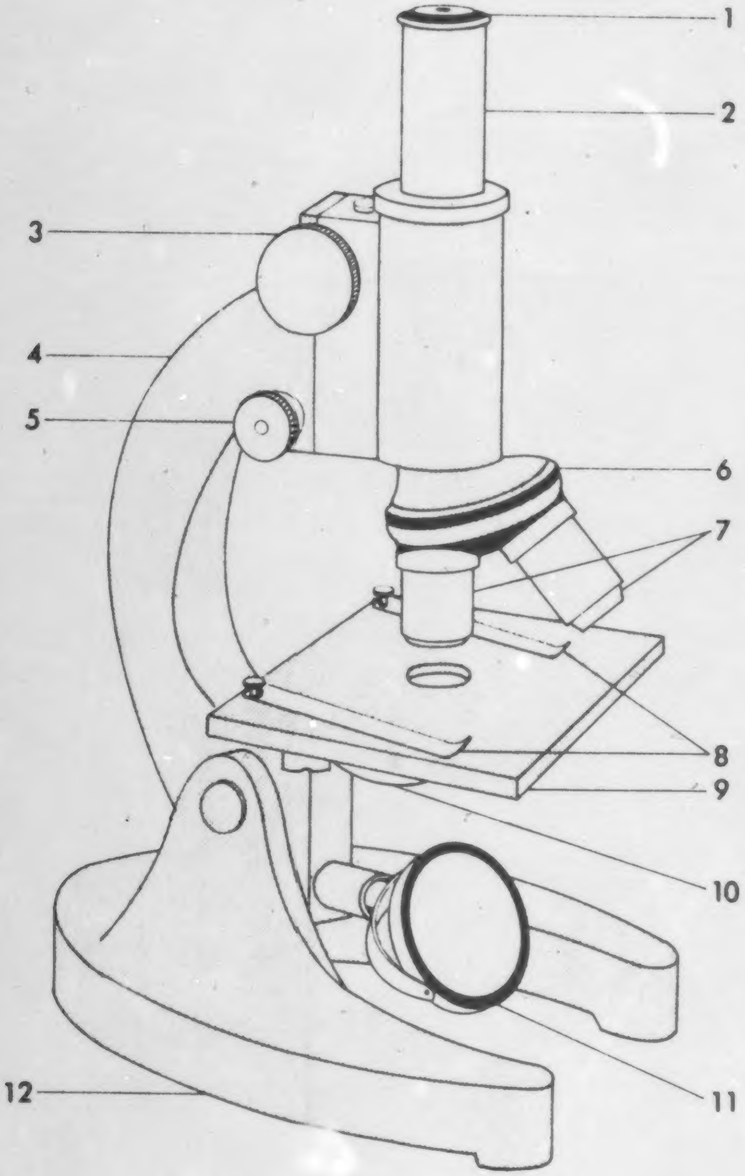
UNIT: Laboratory Equipment

WORKSHEET: Compound Microscope

Objective: II.2--Students will identify the structure and function of parts of a "typical" compound microscope.

Instructions: This worksheet will help you prepare for the Compound Microscope Game. Study the diagram carefully. For items 1-12, match the number of the microscope part with the part shown on the diagram. For items 13-24, match the part of the microscope with the described function.

TGT WORKSHEET: II.2 Compound Microscope



Microscope parts
- arm
- base
- coarse adjustment
- diaphragm
- eyepiece
- fine adjustment
- mirror
- objectives
- revolving nosepiece
- stage
- stage clips
- tube

TGT WORKSHEET: II.2 Compound Microscope

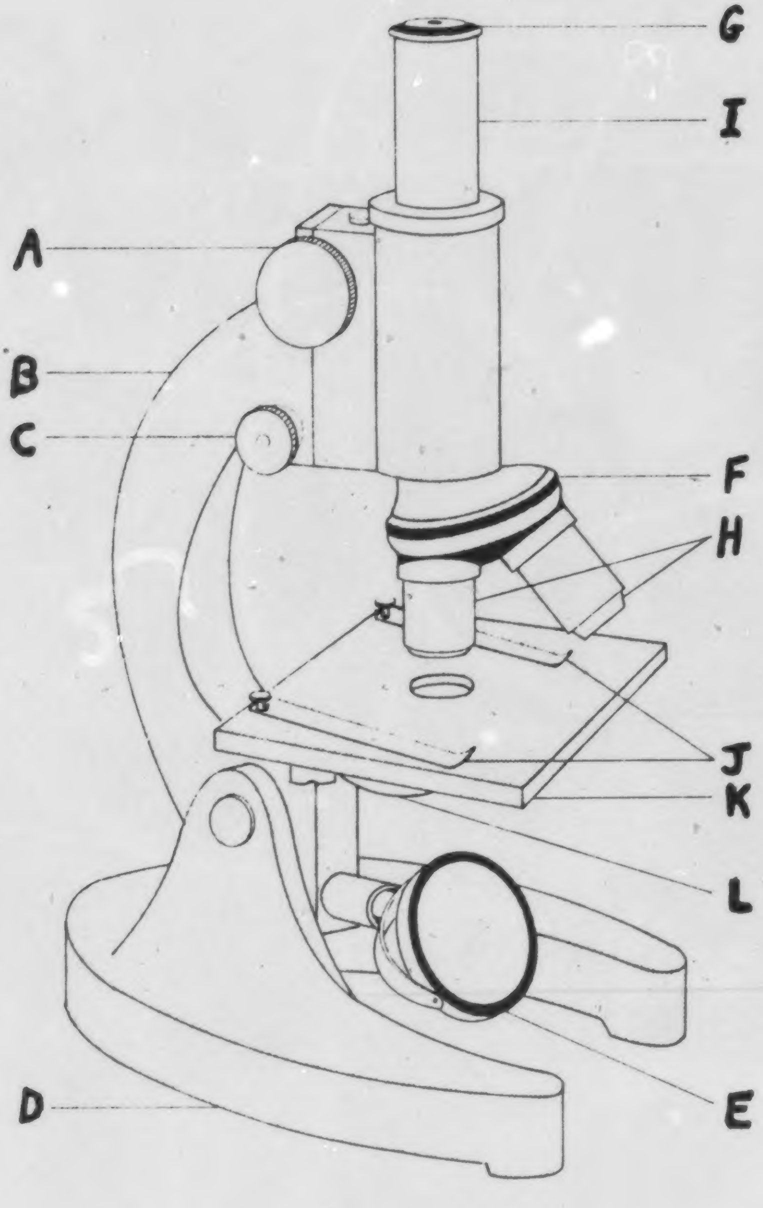
Part 1 is ____________ 1	Part 2 is ____________ 2	Part 3 is ____________ 3
Part 4 is ____________ 4	Part 5 is ____________ 5	Part 6 is ____________ 6
Part 7 is ____________ 7	Part 8 is ____________ 8	Part 9 is ____________ 9
Part 10 is ____________ 10	Part 11 is ____________ 11	Part 12 is ____________ 12
Supports the microscope. ____________ 13	Holds the objectives. ____________ 14	Supports the tube. ____________ 15
Reflects the light. ____________ 16	Keeps the slide in position. ____________ 17	The part you look through. ____________ 18
Moves the tube up and down. ____________ 19	Lenses of different power. ____________ 20	Supports the slide. ____________ 21
Controls light as the size of the openings varies. ____________ 22	Holds the lenses the proper distance apart. ____________ 23	Moves the tube slightly to sharpen the focus. ____________ 24

WORKSHEET ANSWERS

II.2 Compound Microscope

1. eyepiece
2. tube
3. coarse adjustment
4. arm
5. fine adjustment
6. revolving nosepiece
7. objectives
8. stage clips
9. stage
10. diaphragm
11. mirror
12. base
13. base
14. revolving nosepiece
15. arm
16. mirror
17. stage clips
18. eyepiece
19. coarse adjustment
20. objectives
21. stage
22. diaphragm
23. tube
24. fine adjustment

TGT GAMESHEET: II.2 Compound Microscope


G
I
A
B
C
F
H
J
K
L
E
D

TGT GAMESHEET: II.2 Compound Microscope

Part I is the ________ 1	Moves the tube slightly to sharpen the focus. ________ 2	Part F is the ________ 3
Supports the tube. ________ 4	Part D is the ________ 5	Supports the slide. ________ 6
Part G is the ________ 7	Holds the objectives. ________ 8	Part B is the ________ 9
Controls light as the size of the openings varies. ________ 10	Part J is the ________ 11	Moves the tube up and down. ________ 12
Part C is the ________ 13	Supports the microscope. ________ 14	Part L is the ________ 15
Keeps the slide in position. ________ 16	Part A is the ________ 17	The part you look through. ________ 18
Reflects the light. ________ 19	Part K is the ________ 20	Part E is the ________ 21
Lenses of different power. ________ 22	Part H is the ________ 23	Holds the lenses the proper distance apart. ________ 24

GAMESHEET ANSWERS

II.2 Compound Microscope

1. tube
2. fine adjustment
3. revolving nosepiece
4. arm
5. base
6. stage
7. eyepiece
8. revolving nosepiece
9. arm
10. diaphragm
11. stage clips
12. coarse adjustment
13. fine adjustment
14. base
15. diaphragm
16. stage clips
17. coarse adjustment
18. eyepiece
19. mirror
20. stage
21. mirror
22. objectives
23. objectives
24. tube

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Summary of Life Processes

Objective: III.1--a. Students will identify the definitions associated with the activities of living things.

b. Students will identify life processes using real situations.

Instructions: This worksheet will help you prepare for the Summary of Life Processes Game. For each item, match the life process with the correct description or situation.

The Life Processes of Living Things

absorption
assimilation
circulation
digestion
excretion
food-getting
growth
ingestion
metabolism
movement
reproduction
respiration
secretion
sensitivity (response)

TGT WORKSHEET: III.1 Summary of Life Processes

The way in which organisms obtain their food. 1	The breaking down of food into simpler products that the organism's body can use. 2	The passage of a simple substance into the internal parts of a plant or animal. 3
The transportation of digested foods and other materials throughout the organism. 4	The changing of digested food into new living material to be used for the growth and repair of damaged or worn-out parts. 5	The increase in size of an organism. 6
The process by which an organism produces and gives off useful chemical compounds. 7	The moving of the entire organism or the material inside the organism. 8	The process by which an organism gives rise to offspring like itself. 9
The ability of an organism to detect and react to its changing environment. 10	The taking in of oxygen by an organism for the purpose of releasing energy and giving off carbon dioxide. 11	All the chemical processes that take place in an organism. 12
The elimination of waste. 13	Leaves of a geranium plant turn toward sunlight. 14	A tiger searches for food. 15
People sweat after playing basketball. 16	A cat gives birth to kittens. 17	Food changes to flesh and bone. 18
The blood carries oxygen and digested food to the body cells. 19	Birds fly and fish swim. 20	A radish seed becomes a radish plant. 21
Starches are changed to sugars in your body. 22	The production of saliva. 23	A plant takes in water and minerals through its roots. 24
The process by which animals take in foods which have been manufactured from raw materials. 25	Plants get rid of excess water and carbon dioxide through their leaves. 26	A monkey eating a banana. 27

WORKSHEET ANSWERS

III.1 Summary of Life Processes

1. food-getting
2. digestion
3. absorption
4. circulation
5. assimilation
6. growth
7. secretion
8. movement
9. reproduction
10. sensitivity
11. respiration
12. metabolism
13. excretion
14. sensitivity
15. food-getting
16. excretion
17. reproduction
18. assimilation
19. circulation
20. movement
21. growth
22. digestion
23. secretion
24. absorption
25. ingestion
26. excretion
27. ingestion

TGT GAMESHEET: III.1 Summary of Life Processes

Food changes to flesh and bone. 1	The moving of the entire organism or the material inside the organism. 2	Birds fly and fish swim. 3
The blood carries oxygen and digested food to the body cells. 4	Plants get rid of excess water and carbon dioxide through their leaves. 5	The breaking down of food into simpler products that the organism's body can use. 6
A radish seed becomes a radish plant. 7	The changing of digested food into new living material to be used for the growth and repair of damaged or worn-out parts. 8	A squirrel eating acorns. 9
The production of saliva. 10	A plant takes in water and minerals through its roots. 11	All the chemical processes that take place in an organism. 12
The increase in size of an organism. 13	The process by which an organism gives rise to offspring like itself. 14	The passage of a simple substance into the internal parts of a plant or animal. 15
People sweat in hot weather. 16	A dog gives birth to puppies. 17	The elimination of waste. 18
The taking in of oxygen by an organism for the purpose of releasing energy and giving off carbon dioxide. 19	The process by which an organism produces and gives off useful chemical compounds. 20	The transportation of digested foods and other materials throughout the organism. 21
The way in which organisms obtain their food. 22	The ability of an organism to detect and react to its changing environment. 23	Starches are changed to sugars in your body. 24
Leaves of a geranium plant turn toward sunlight. 25	A boy buys a candy bar. 26	The process by which animals take in foods which have been manufactured from raw materials. 27

GAMESHEET ANSWERS

III.1 Summary of Life Processes

1. assimilation
2. movement
3. movement
4. circulation
5. excretion
6. digestion
7. growth
8. assimilation
9. ingestion
10. secretion
11. absorption
12. metabolism
13. growth
14. reproduction
15. absorption
16. excretion
17. reproduction
18. excretion
19. respiration
20. secretion
21. circulation
22. food-getting
23. sensitivity
24. digestion
25. sensitivity
26. food-getting
27. ingestion

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Cell Structure and Function

Objective: III.2--Students will identify the parts and functions of a typical plant cell and animal cell, and compare a typical plant and animal cell.

Instructions: This worksheet will help you prepare for the Cell Structure and Function Game. Match the cell (I or II) or the letter of the cell part for items 1-11. For items 12-29, name the cell part that performs each function.

Vocabulary:

animal cell
cell wall
cell membrane
chloroplast
chromatin
chromosomes
cytoplasm
mitochondria
nucleolus [nucleoli (pl.)]
nucleoplasm
nucleus
plant cell
protoplasm
vacuole

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Cell Structure and Function

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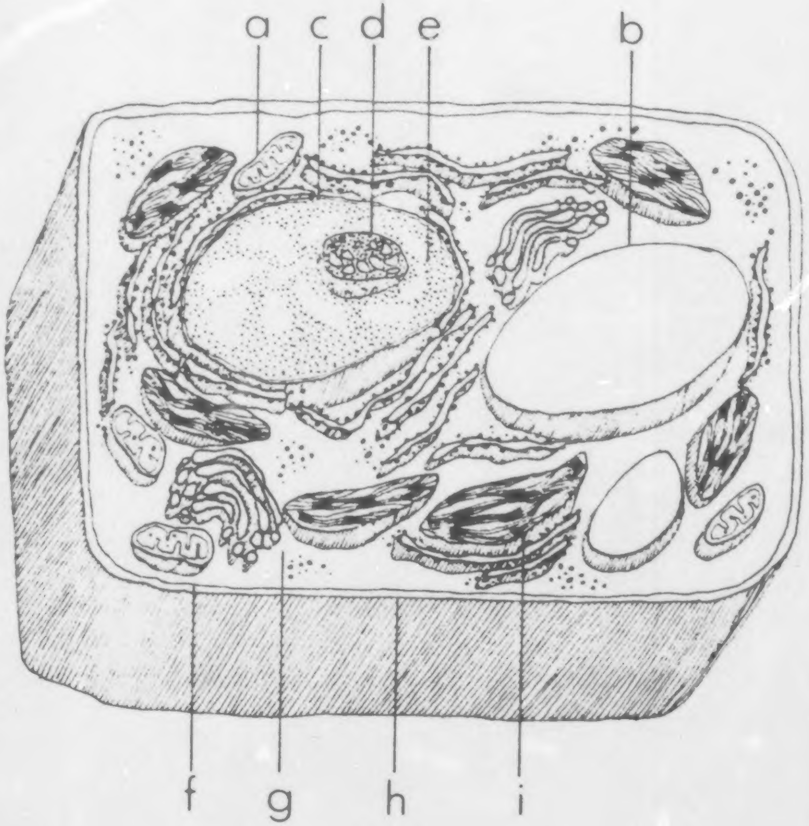
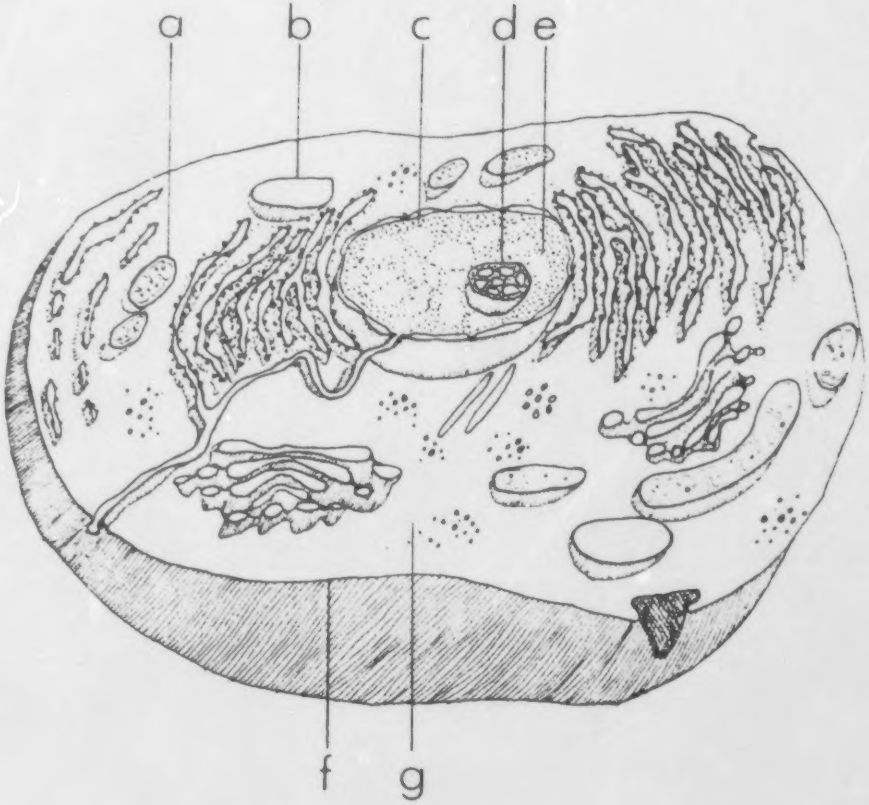
chloroplast
chromatin
chromosomes
cytoplasm
mitochondria
nucleolus [nucleoli (pl.)]
nucleoplasm
nucleus
plant cell
protoplasm
vacuole

TGT WORKSHEET: III.2 Cell Structure and Function

I



II



TGT WORKSHEET: III.2 Cell Structure and Function

The animal cell is
Cell I
Cell II
1

The plant cell is
Cell I
Cell II
2

The nucleus is
________ 3

The vacuole is
________ 4

The cell wall is
________ 5

The chromatin is
________ 6

The cell membrane is
________ 7

The cytoplasm is
________ 8

The mitochondria is
________ 9

The chloroplast is
________ 10

The nucleolus is
________ 11

Name the structures found in plant cells but not animal cells.
________ and ________ 12

It controls the cell's activities.
________ 13

The structures that release energy from food.
________ 14

The food-making parts of a plant cell.
________ 15

It allows some materials to move into and keeps others out of a cell.
________ 16

Rigid protective layer of a plant cell.
________ 17

Contain chlorophyll.
________ 18

The protoplasm surrounding the nucleus.
________ 19

The small body in the nucleus of most cells.
________ 20

Material in the nucleus that contains the genes.
________ 21

The storage areas for food or waste.
________ 22

Name the three main parts of an animal cell.
________ 23

Which cell cannot carry on photosynthesis?
________ 24

Which type of cell would you find in humans?
________ 25

Which type of cell would you find in trees?
________ 26

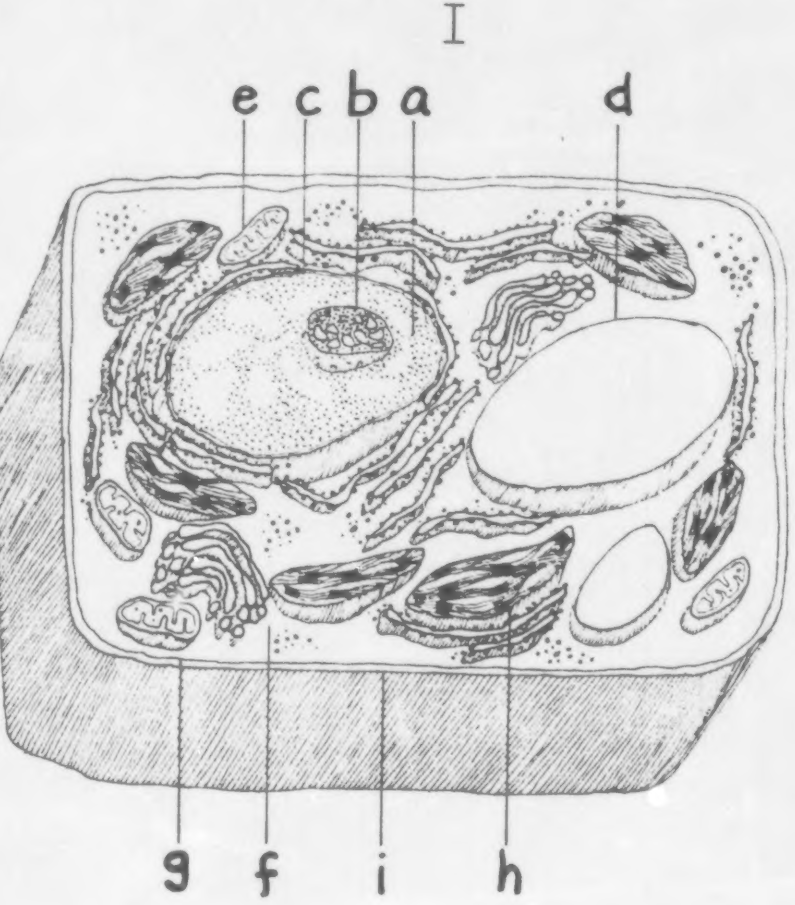
During cell division, chromosomes are formed from this part.
________ 27

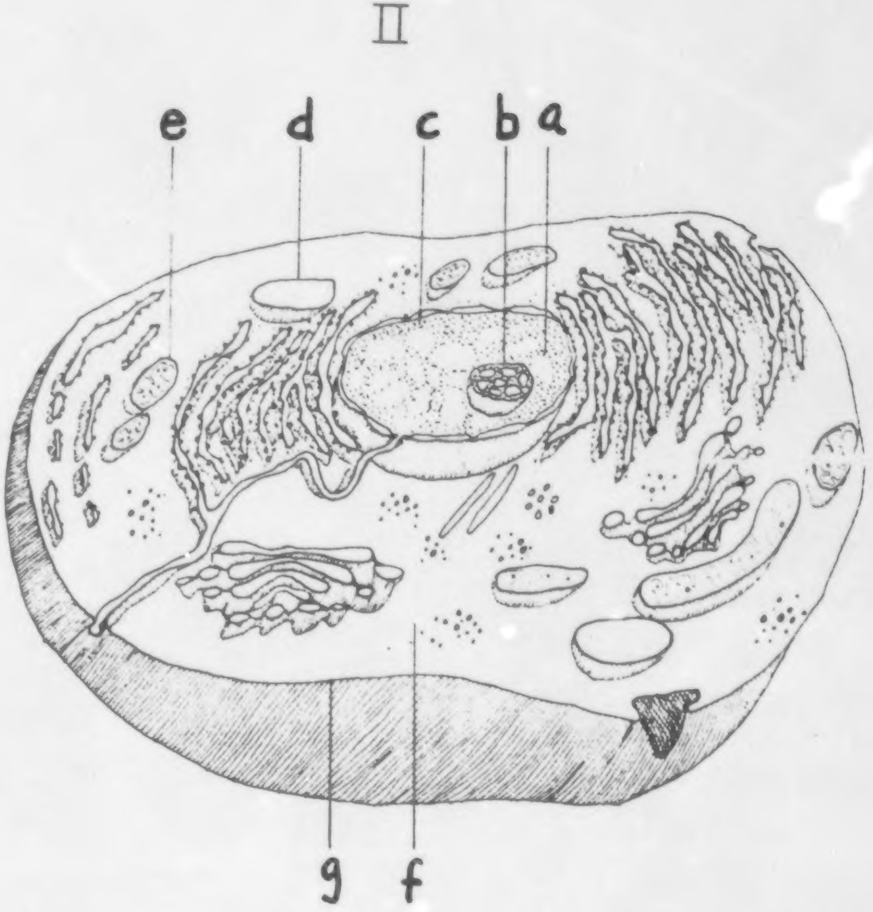
It is a mixture of water, salts and organic compounds.
________ 28

Produces RNA and some proteins.
________ 29

The part that makes a plant cell more rigid than an animal cell.
30

TGT GAMESHEET: III.2 Cell Structure and Function


I
e
c
b
a
d
g
f
i
h



WORKSHEET ANSWERS

III.2 Cell Structure and Function

1. II
2. I
3. c
4. b
5. h
6. e
7. f
8. g
9. a
10. i
11. d
12. cell wall, chloroplasts
13. nucleus
14. mitochondria
15. chloroplasts
16. cell membrane
17. cell wall
18. chloroplasts
19. cytoplasm
20. nucleolus
21. chromatin
22. vacuoles
23. nucleus, cell membrane, cytoplasm
24. animal cell
25. animal cell
26. plant cell
27. chromatin
28. cytoplasm
29. nucleolus
30. cell wall

TGT GAMESHEET: III.2 Cell Structure and Function

The food-making parts of a plant cell. ____________ 1

The cell wall is letter ___ 2

The storage areas for food or waste. ____________ 3

The structures that release energy from food. ____________ 4

The vacuole is letter ___ 5

Material in the nucleus that contains the genes. ____________ 6

It controls the cell's activities. ____________ 7

The nucleus is letter ___ 8

Produces RNA and some proteins. ____________ 9

The structures found in plant cells but not animal cells are ________ and ________. 10

The plant cell is
Cell I
Cell II 11

The cell membrane is letter ___ 12

The nucleolus is letter ___ 13

The animal cell is
Cell I
Cell II 14

Contain chlorophyll. ____________ 15

Which type of cell would you find in trees? ____________ 16

During cell division, chromosomes are formed from this part. ____________ 17

Rigid protective layer of a plant cell. ____________ 18

The mitochondria is letter ___ 19

The chloroplast is letter ___ 20

It allows some materials to move into and keeps others out of the cell. ____________ 21

The cytoplasm is letter ____________ 22

Which type of cell would you find in humans? ____________ 23

It is a mixture of water, salts, and organic compounds. ____________ 24

The protoplasm surrounding the nucleus. ____________ 25

Which cell cannot carry on photosynthesis? ____________ 26

The small body within the nucleus of most cells. ____________ 27

The chromatin is letter ___ 28

Name the three main parts of an animal cell. ____________________ 29

The part that makes a plant cell more rigid than an animal cell. 30

GAMESHEET ANSWERS

III.2 Cell Structure and Function

1. chloroplasts
2. i
3. vacuoles
4. mitochondria
5. d
6. chromatin
7. nucleus
8. c
9. nucleolus
10. cell wall, chloroplasts
11. Cell I
12. g
13. b
14. Cell II
15. chloroplasts
16. plant cell
17. chromatin
18. cell wall
19. e
20. h
21. cell membrane
22. f
23. animal cell
24. cytoplasm
25. cytoplasm
26. animal cell
27. nucleolus
28. a
29. nucleus, cell membrane, cytoplasm
30. cell wall

TGT LIFE SCIENCE

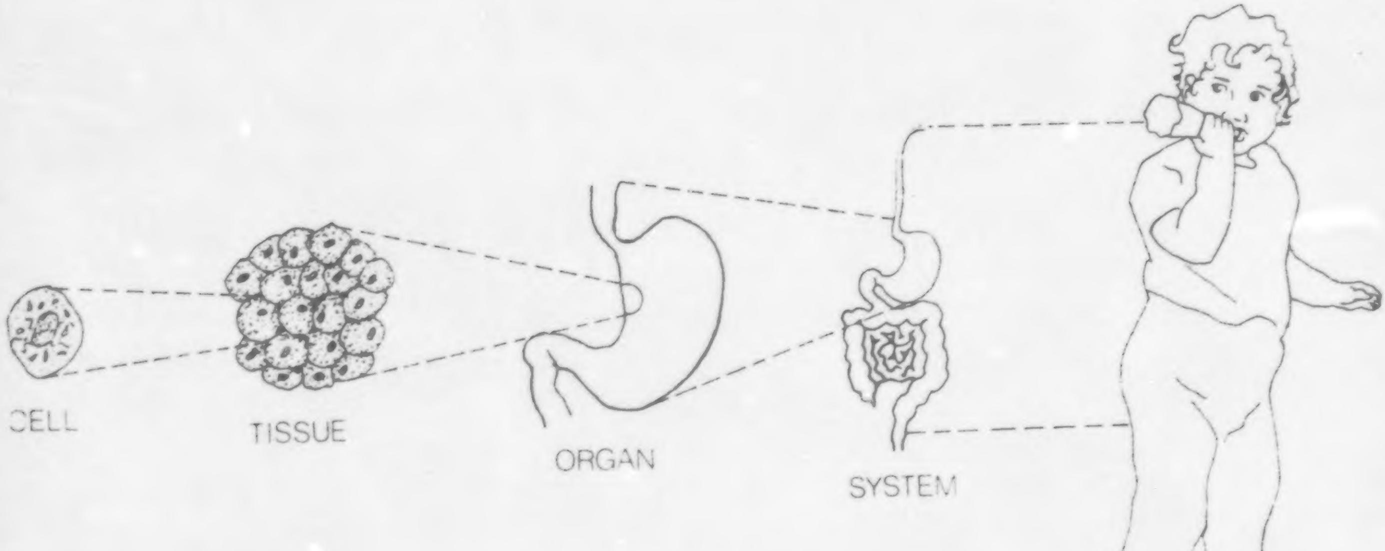
UNIT: Life Processes
WORKSHEET: Levels of Organization

Objective: III.3--Students will identify tissues, organs, and systems of an organism.

Instructions: This worksheet will help you prepare for the Levels of Organization Game. Identify each item on the worksheet as a cell, tissue, organ, system or organism.

Vocabulary:

cambium
cartilage
cell
organ
organism
oviduct
paramecium
pharynx
phloem
system
tissue
uterus
xylem
yeast



TGT WORKSHEET: III.3 Levels of Organization

muscle __________ 1	mouth, esophagus, stomach, small and large intestines __________ 2	horse __________ 3
heart __________ 4	blood __________ 5	human being __________ 6
stem __________ 7	eye __________ 8	leaf __________ 9
ovaries, uterus, oviduct __________ 10	fish __________ 11	lung __________ 12
grasshopper __________ 13	brain __________ 14	blood, blood vessels, the heart __________ 15
bone __________ 16	root __________ 17	foot __________ 18
xylem and phloem tubes __________ 19	stomach __________ 20	nose, pharynx, lungs __________ 21
flower __________ 22	nerves, brain, spinal cord __________ 23	oak tree __________ 24
cork __________ 25	fruit __________ 26	ear __________ 27
paramecium __________ 28	seed __________ 29	yeast __________ 30

WORKSHEET ANSWERS

III.3 Levels of Organization

1. cell or tissue
2. system
3. organism
4. organ
5. cell or tissue
6. organism
7. organ
8. organ
9. organ
10. system
11. organism
12. organ
13. organism
14. organ
15. system
16. organ
17. organ
18. organ
19. system
20. organ
21. system
22. system
23. system
24. organism
25. tissue
26. organ
27. organ
28. cell or organism
29. organ
30. cell or organism

TGT GAMESHEET: III.3 Levels of Organization

monkey 1	blood, blood vessels, the heart 2	cambium 3
nerve 4	ear 5	amoeba 6
heart 7	xylem and phloem tubes 8	fruit 9
seed 10	cartilage 11	nerves, brain, spinal cord 12
flower 13	xylem 14	blood 15
butterfly 16	root 17	eye 18
muscle 19	bone 20	maple tree 21
stem 22	ovaries, uterus, oviduct 23	lung 24
skin 25	leaf 26	yeast 27
mouth, esophagus, stomach, small intestine, large intestine 28	brain 29	human being 30

GAMESHEET ANSWERS

III.3 Levels of Organization

1. organism
2. system
3. tissue
4. cell or tissue
5. organ
6. cell or organism
7. organ
8. system
9. organ
10. organ
11. tissue
12. system
13. system
14. tissue
15. cell or tissue
16. organism
17. organ
18. organ
19. cell or tissue
20. organ
21. organism
22. organ
23. system
24. organ
25. cell or tissue
26. organ
27. cell or organism
28. system
29. organ
30. organism

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Classifying Living Things: Plants

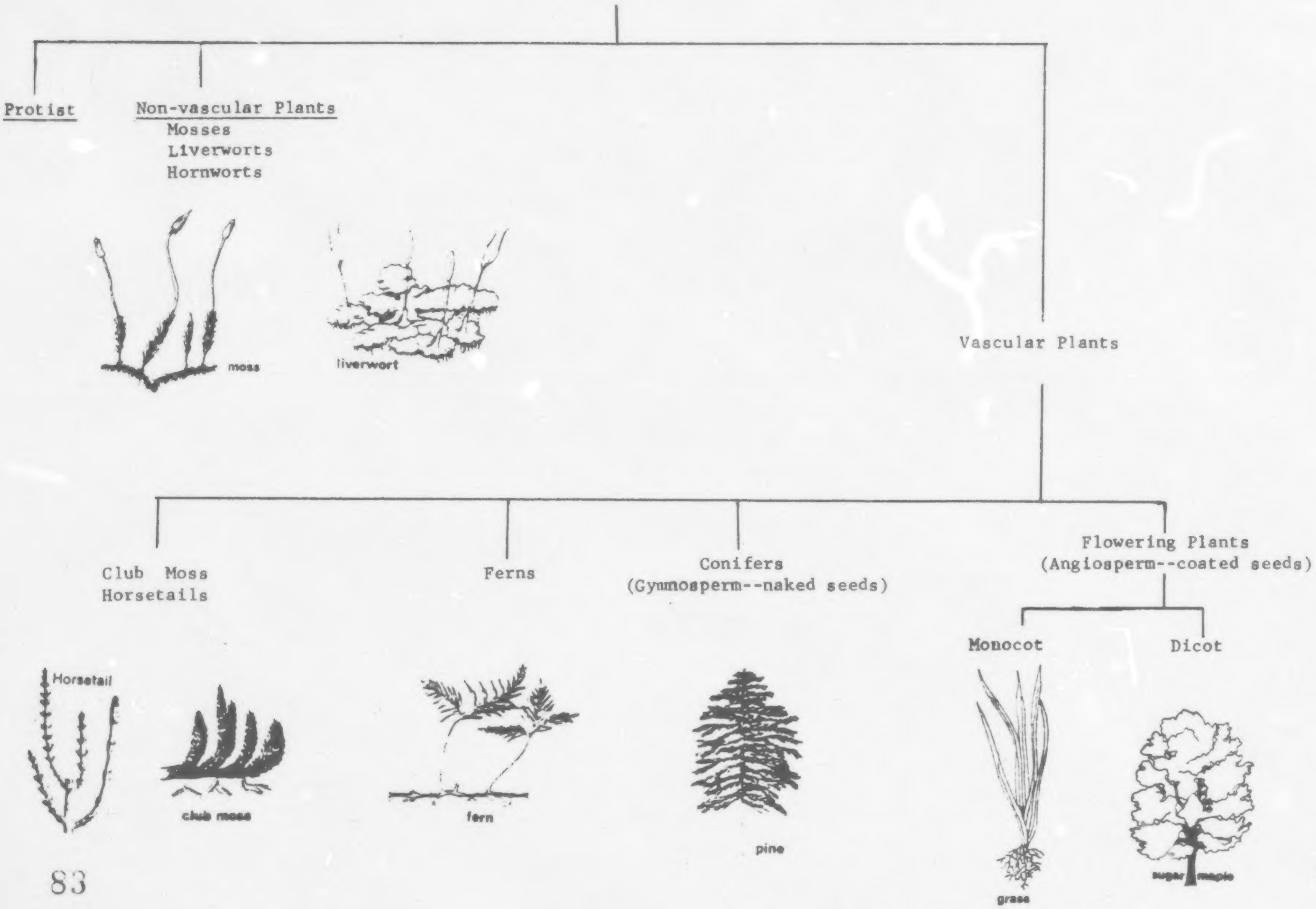
Objective: III.4.1--Students will classify each plant given according to specific characteristics.

Instructions: This worksheet will help you prepare for the Plant Classification Game. Define the vocabulary terms below and study the classification chart on the following page carefully. For each item give the special name of the plant pictured or the name of the group to which it belongs.

Vocabulary:

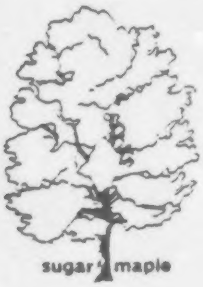
conifer (gymnosperm)
dicot
ferns
flowering plants (angiosperm)
monocot
nonvascular plants
protist
vascular plants

PLANT CLASSIFICATION


moss
liverwort
Horsetail
club moss
fern
pine
grass
sugar maple

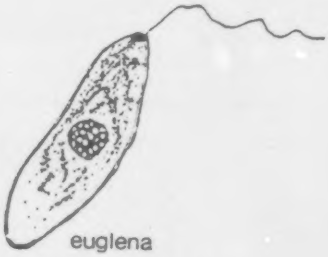
- **Protist**
- **Non-vascular Plants**
  - Mosses
  - Liverworts
  - Hornworts
- Vascular Plants
  - Club Moss, Horsetails
  - Ferns
  - Conifers (Gymnosperm--naked seeds)
  - Flowering Plants (Angiosperm--coated seeds)
    - **Monocot**
    - **Dicot**

TGT WORKSHEET: III.4.1 Plant Classification


sugar maple

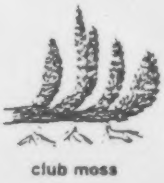
a. vascular plant
b. protist
c. nonvascular plant

1



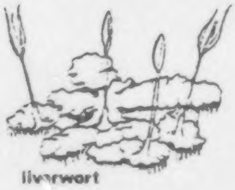
a. vascular plant
b. protist
c. nonvascular plant

2



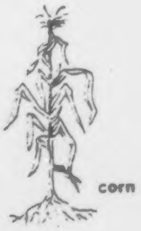
a. vascular plant
b. protist
c. nonvascular plant

3



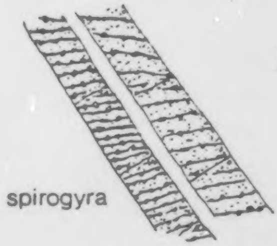
a. vascular plant
b. protist
c. nonvascular plant

4



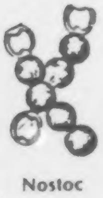
a. vascular plant
b. protist
c. nonvascular plant

5



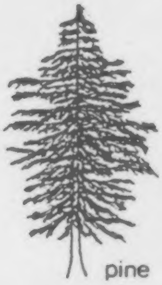
a. vascular plant
b. protist
c. nonvascular plant

6



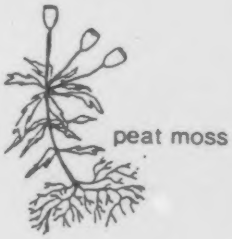
a. vascular plant
b. protist
c. nonvascular plant

7



a. vascular plant
b. protist
c. nonvascular plant

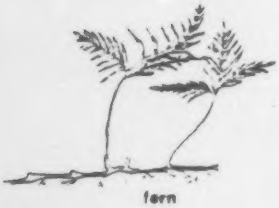
8



a. vascular plant
b. protist
c. nonvascular plant

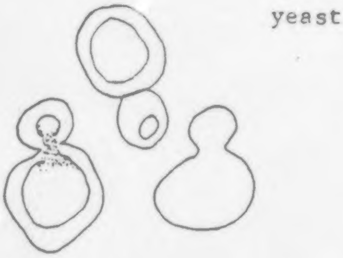
9

TGT WORKSHEET: III.4.1 Plant Classification



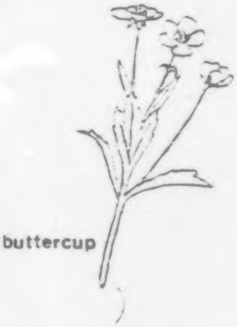
a. vascular plant
b. protist
c. nonvascular plant

10



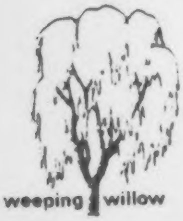
a. vascular plant
b. protist
c. nonvascular plant

11



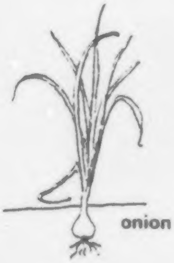
a. conifer
b. monocot
c. dicot
d. primitive land plant

12


weeping willow

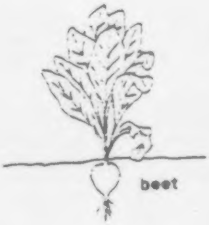
a. monocot
b. conifer
c. dicot
d. primitive land plant

13



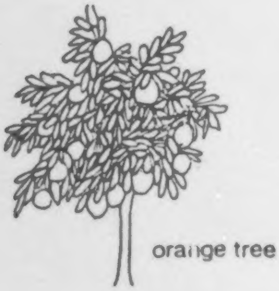
a. conifer
b. dicot
c. primitive land plant
d. monocot

14



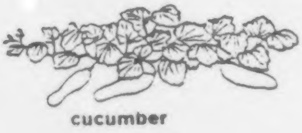
a. dicot
b. primitive land plant
c. monocot
d. conifer

15


orange tree

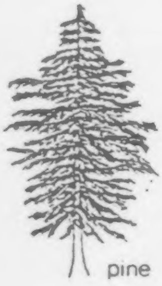
a. primitive land plant
b. monocot
c. conifer
d. dicot

16



a. monocot
b. conifer
c. dicot
d. primitive land plant

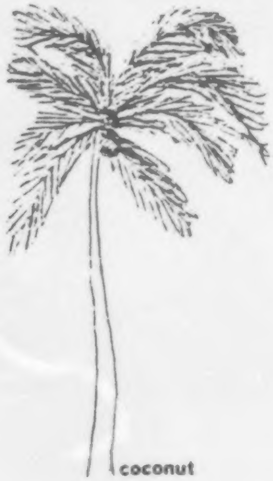
17



a. conifer
b. dicot
c. primitive land plant
d. monocot

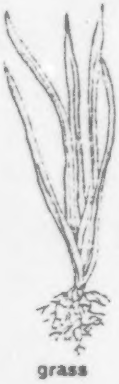
18

TGT WORKSHEET: III.4.1 Plant Classification



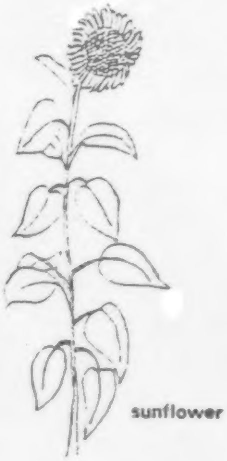
a. dicot
b. primitive land plant
c. monocot
d. conifer

19



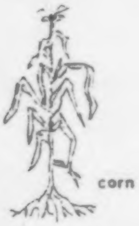
a. monocot
b. conifer
c. primitive land plant
d. dicot

20



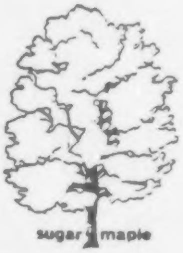
a. conifer
b. primitive land plant
c. monocot
d. dicot

21



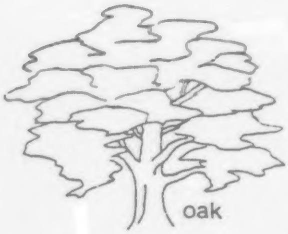
a. protist
b. dicot
c. conifer
d. monocot

22


sugar maple

a. conifer
b. dicot
c. monocot
d. primitive land plant

23

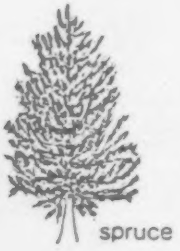


a. conifer
b. dicot
c. monocot
d. primitive land plant

24

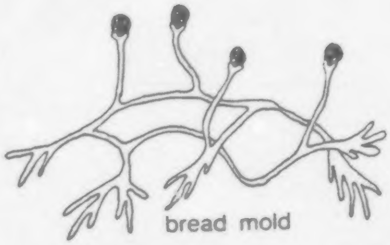
TGT WORKSHEET: III.4.1 Plant Classification

60



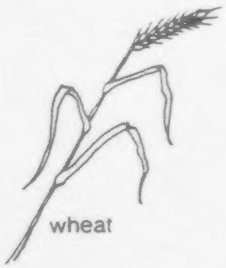
a. conifer
b. dicot
c. protist
d. monocot

25



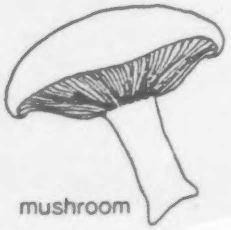
a. monocot
b. protist
c. dicot
d. conifer

26



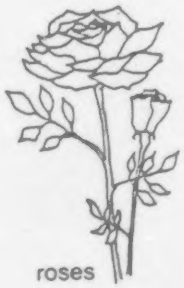
a. monocot
b. protist
c. dicot
d. conifer

27



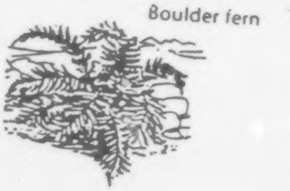
a. conifer
b. dicot
c. protist
d. monocot

28



a. dicot
b. protist
c. monocot
d. conifer

29


Boulder fern

a. protist
b. vascular plant
c. nonvascular plant

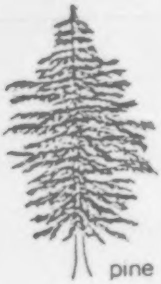
30

WORKSHEET ANSWERS

III.4.1 Plant Classification

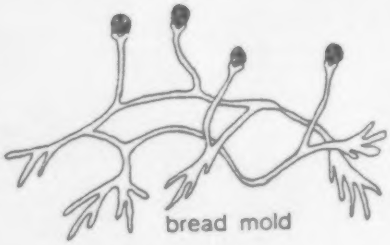
1. a) vascular plant
2. b) protist
3. a) vascular plant
4. c) nonvascular plant
5. a) vascular plant
6. b) protist
7. b) protist
8. a) vascular plant
9. c) nonvascular plant
10. a) vascular plant
11. b) protist
12. c) dicot
13. c) dicot
14. d) monocot
15. a) dicot
16. d) dicot
17. c) dicot
18. a) conifer
19. c) monocot
20. a) monocot
21. d) dicot
22. d) monocot
23. b) dicot
24. b) dicot
25. a) conifer
26. b) protist
27. a) monocot
28. c) protist
29. c) monocot
30. b) vascular plant

TGT GAMESHEET: III.1.4 Plant Classification


pine

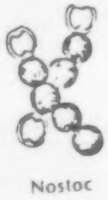
a. vascular plant
b. protist
c. nonvascular plant

1


bread mold

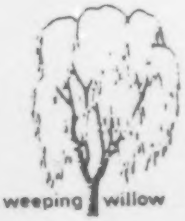
a. protist
b. monocot
c. conifer
d. dicot

2


Nostoc

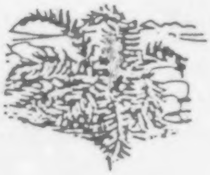
a. vascular plant
b. protist
c. nonvascular plant

3


weeping willow

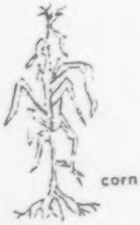
a. conifer
b. dicot
c. monocot
d. primitive land plant

4


boulder fern

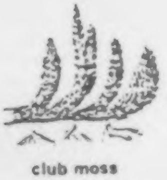
a. protist
b. vascular plant
c. nonvascular plant

5


corn

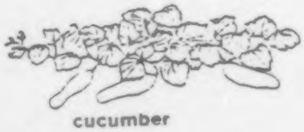
a. conifer
b. dicot
c. monocot
d. protist

6


club moss

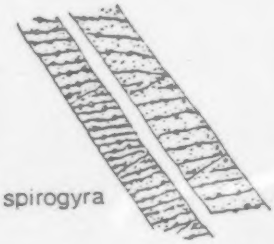
a. vascular plant
b. nonvascular plant
c. protist

7


cucumber

a. conifer
b. dicot
c. monocot
d. protist

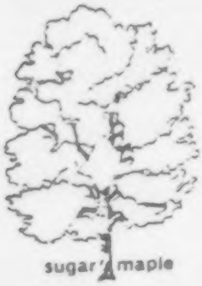
8


spirogyra

a. vascular plant
b. nonvascular plant
c. protist

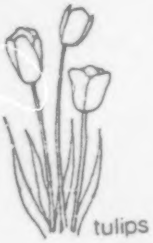
9

TGT GAMESHEET: III.4.1 Plant Classification


sugar maple

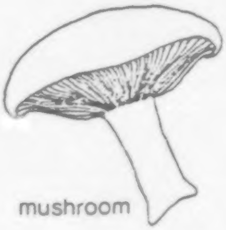
a. vascular plant
b. protist
c. nonvascular plant

10



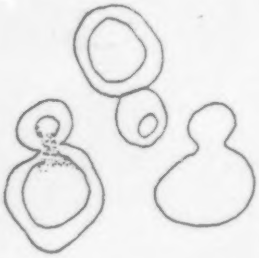
a. primitive land plant
b. monocot
c. conifer
d. dicot

11



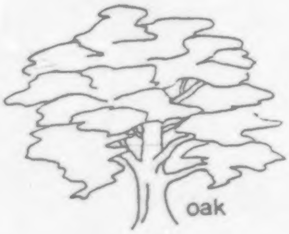
a. conifer
b. dicot
c. protist
d. monocot

12



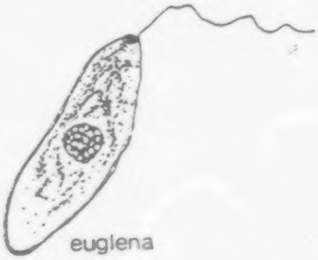
a. vascular plant
b. protist
c. nonvascular plant

13



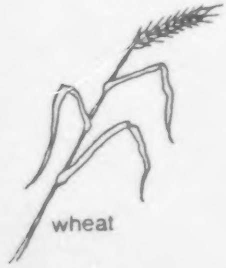
a. primitive land plant
b. monocot
c. dicot
d. conifer

14



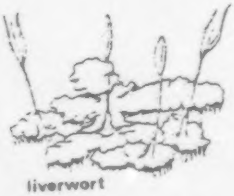
a. vascular plant
b. nonvascular plant
c. protist

15



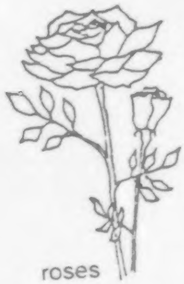
a. conifer
b. dicot
c. protist
d. monocot

16



a. vascular plant
b. protist
c. nonvascular plant

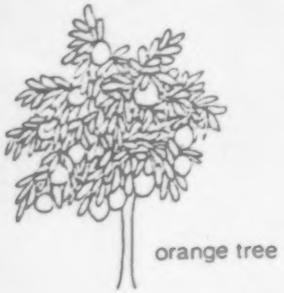
17



a. dicot
b. protist
c. monocot
d. conifer

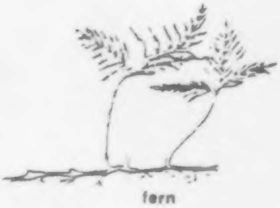
18

TGT GAMESHEET: III.4.1 Plant Classification


orange tree

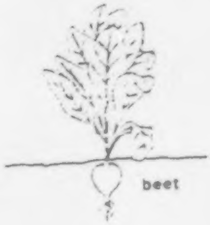
a. protist
b. dicot
c. monocot
d. conifer

19



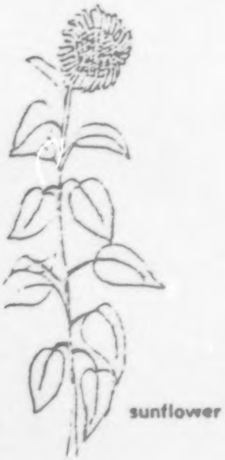
a. nonvascular plant
b. vascular plant
c. protist

20



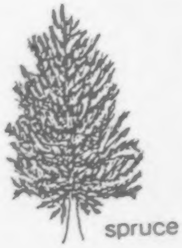
a. dicot
b. primitive land plant
c. monocot
d. conifer

21



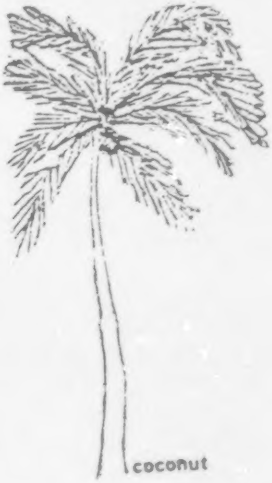
a. conifer
b. monocot
c. protist
d. dicot

22



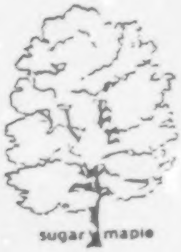
a. protist
b. conifer
c. dicot
d. monocot

23



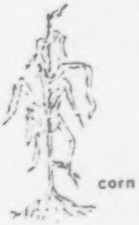
a. primitive land plant
b. conifer
c. dicot
d. monocot

24


sugar maple

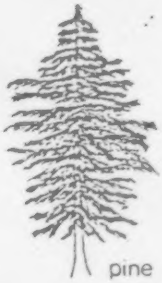
a. conifer
b. dicot
c. monocot
d. protist

25



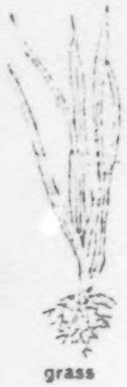
a. conifer
b. dicot
c. monocot
d. protist

26



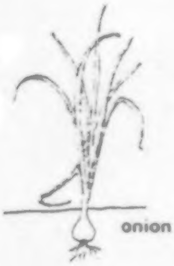
a. conifer
b. dicot
c. monocot
d. protist

27



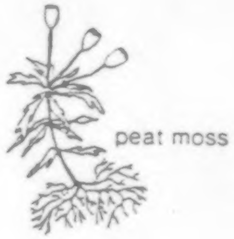
a. primitive land plant
b. dicot
c. monocot
d. conifer

28



a. primitive land plant
b. dicot
c. monocot
d. conifer

29



a. vascular plant
b. protist
c. nonvascular plant

30

GAMESHEET ANSWERS

III.4.1 Plant Classification

1. a) vascular plant
2. a) protist
3. b) protist
4. b) dicot
5. b) vascular
6. c) monocot
7. a) vascular
8. b) dicot
9. c) protist
10. a) vascular plant
11. d) dicot
12. c) protist
13. b) protist
14. c) dicot
15. c) protist
16. d) monocot
17. c) nonvascular plant
18. c) monocot
19. b) dicot
20. b) vascular plant
21. a) dicot
22. d) dicot
23. b) conifer
24. d) monocot
25. b) dicot
26. c) monocot
27. a) conifer
28. c) monocot
29. c) monocot
30. c) nonvascular plant

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Classifying Living Things: Animals(I)

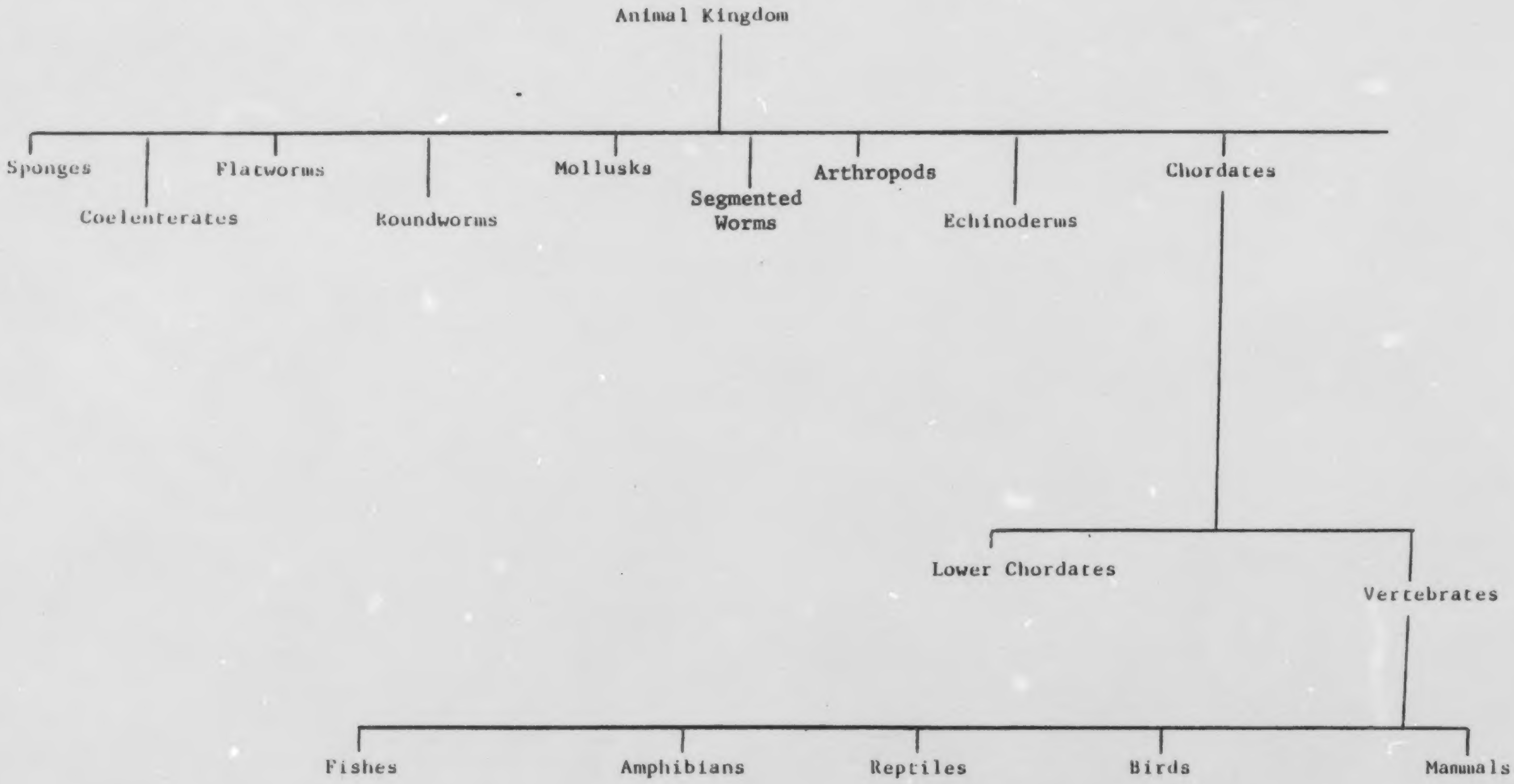
Objective: III.4.2.1--Students will classify each animal organism according to specific characteristics.

Instructions: This worksheet will help you prepare for the Animal Classification (I) Game. Study the information below and the classification chart very carefully. For each organism, give the specific group to which it belongs.

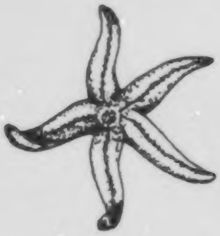
Vocabulary:

amphibians
arthropods
birds
coelenterates
chordates
echinoderms
fishes
flatworms
invertebrates
mammals
mollusks
protists
reptiles
roundworms
segmented worms
sponges
vertebrates

TGT WORKSHEET: III.4.2.1 Animal Classification (I)

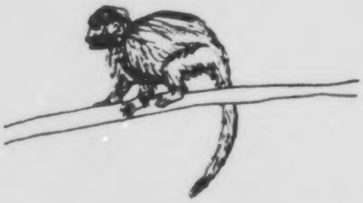

Animal Kingdom
Sponges
Coelenterates
Flatworms
Roundworms
Mollusks
Segmented Worms
Arthropods
Echinoderms
Chordates
Lower Chordates
Vertebrates
Fishes
Amphibians
Reptiles
Birds
Mammals

TGT WORKSHEET: III.4.2.1 Animal Classification I



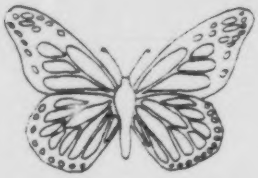
a. sponge
b. echinoderm
c. mollusk
d. coelenterate

1



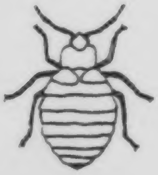
a. amphibian
b. reptile
c. bird
d. mammal

2



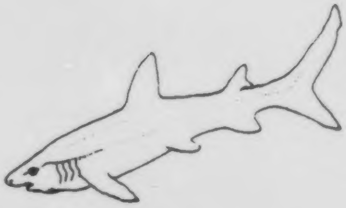
a. arthropod
b. coelenterate
c. amphibian
d. echinoderm

3



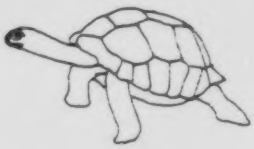
a. arthropod
b. coelenterate
c. amphibian
d. echinoderm

4



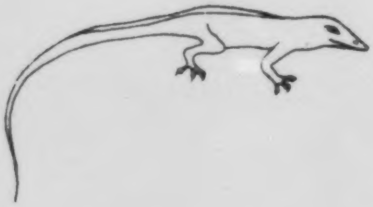
a. fish
b. amphibian
c. reptile
d. mollusk

5



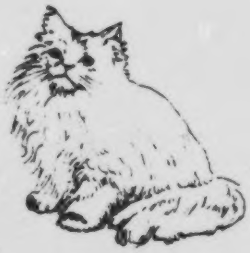
a. mollusk
b. amphibian
c. reptile
d. fish

6



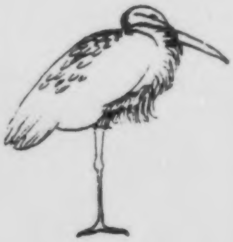
a. amphibian
b. reptile
c. fish
d. arthropod

7



a. mollusk
b. mammal
c. amphibian
d. reptile

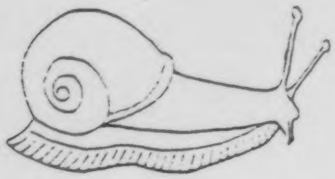
8



a. amphibian
b. reptile
c. bird
d. mammal

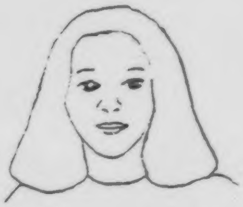
9

TGT WORKSHEET: III.4.2.1 Animal Classification I



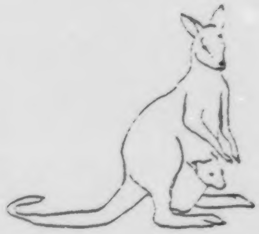
a. fish
b. reptile
c. mollusk
d. amphibian

10



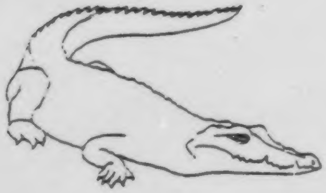
a. amphibian
b. reptile
c. bird
d. mammal

11



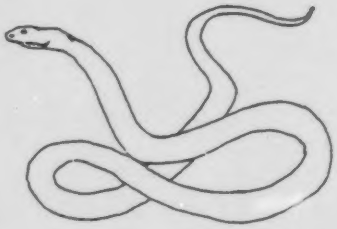
a. amphibian
b. reptile
c. bird
d. mammal

12



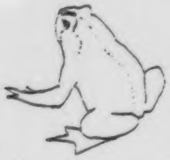
a. amphibian
b. reptile
c. bird
d. mammal

13



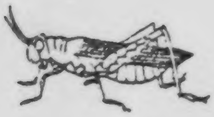
a. segmented worm
b. roundworm
c. reptile
d. flatworm

14



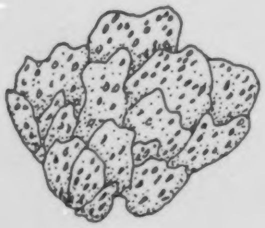
a. arthropod
b. reptile
c. amphibian
d. mammal

15



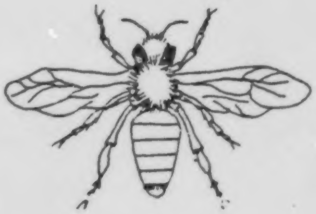
a. mollusk
b. sponge
c. arthropod
d. echinoderm

16



a. mollusk
b. sponge
c. arthropod
d. echinoderm

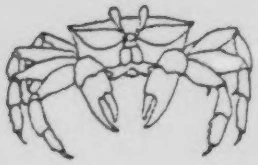
17



a. mollusk
b. bird
c. arthropod
d. sponge

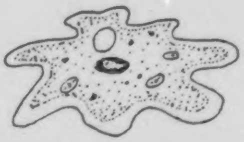
18

TGT WORKSHEET: III.4.2.1 Animal Classification I



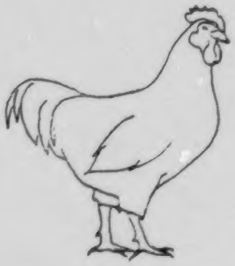
a. mollusk
b. coelenterate
c. arthropod
d. protist

19



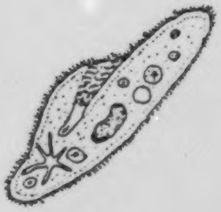
a. mollusk
b. coelenterate
c. arthropod
d. protist

20



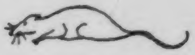
a. amphibian
b. reptile
c. bird
d. mammal

21



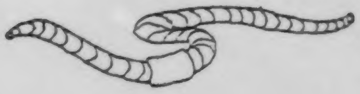
a. mollusk
b. coelenterate
c. arthropod
d. protist

22



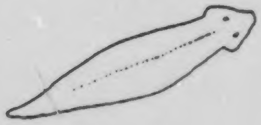
a. amphibian
b. mammal
c. reptile
d. bird

23



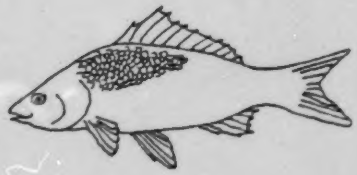
a. roundworm
b. flatworm
c. reptile
d. segmented worm

24



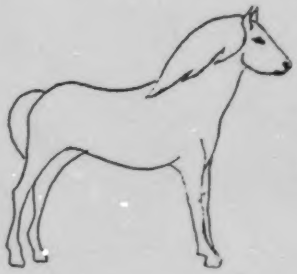
a. roundworm
b. flatworm
c. segmented worm
d. reptile

25



a. fish
b. amphibian
c. reptile
d. mollusk

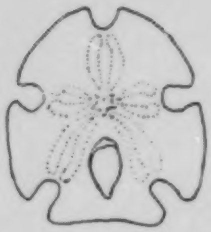
26



a. amphibian
b. reptile
c. fish
d. mammal

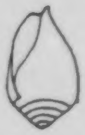
27

TGT WORKSHEET: III.4.2.1 Animal Classification I



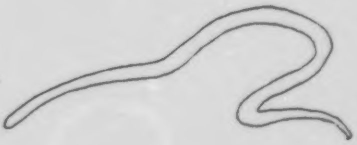
a. mollusk
b. coelenterate
c. echinoderm
d. protist

28



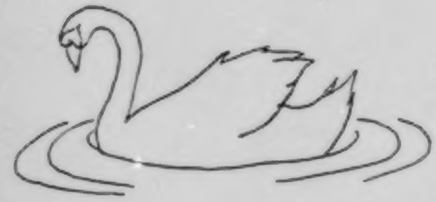
a. mollusk
b. coelenterate
c. echinoderm
d. protist

29



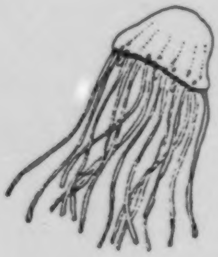
a. roundworm
b. flatworm
c. reptile
d. segmented worm

30



a. amphibian
b. reptile
c. bird
d. mammal

31



a. mollusk
b. coelenterate
c. echinoderm
d. protist

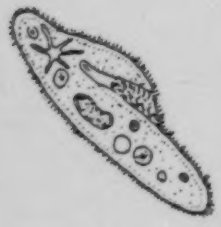
32

WORKSHEET ANSWERS

III.4.2.1 Animal Classification I

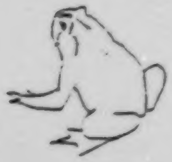
1. b) echinoderm
2. d) mammal
3. a) arthropod
4. a) arthropod
5. a) fish
6. c) reptile
7. b) reptile
8. b) mammal
9. c) bird
10. c) mollusk
11. d) mammal
12. d) mammal
13. b) reptile
14. c) reptile
15. c) amphibian
16. c) arthropod
17. b) sponge
18. c) arthropod
19. c) arthropod
20. d) protist
21. c) bird
22. d) protist
23. b) mammal
24. d) segmented worm
25. b) flatworm
26. a) fish
27. d) mammal
28. c) echinoderm
29. a) mollusk
30. a) roundworm
31. c) bird
32. b) coelenterate

TGT GAMESHEET: III.4.2.1 Animal Classification I



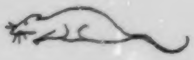
a. arthropod
b. coelenterate
c. mollusk
d. protist

1



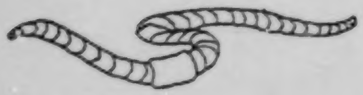
a. amphibian
b. arthropod
c. mammal
d. reptile

2



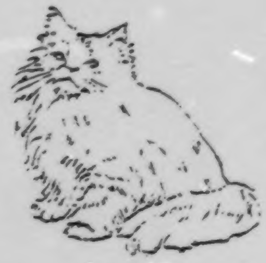
a. bird
b. mammal
c. amphibian
d. reptile

3



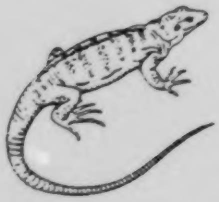
a. roundworm
b. segmented worm
c. flatworm
d. reptile

4



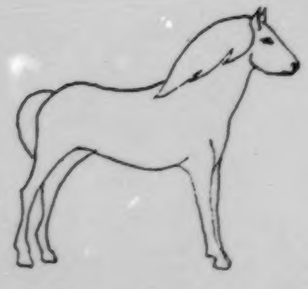
a. amphibian
b. mollusk
c. reptile
d. mammal

5



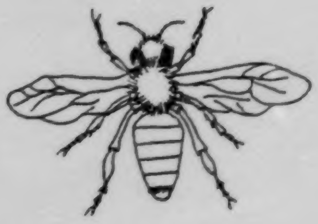
a. arthropod
b. amphibian
c. reptile
d. mammal

6



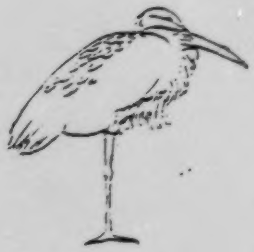
a. amphibian
b. mollusk
c. reptile
d. mammal

7



a. arthropod
b. mollusk
c. sponge
d. bird

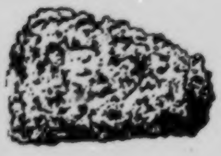
8



a. arthropod
b. amphibian
c. reptile
d. bird

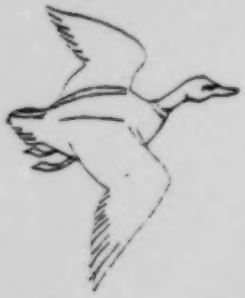
9

TGT GAMESHEET: III.4.2.1 Animal Classification I



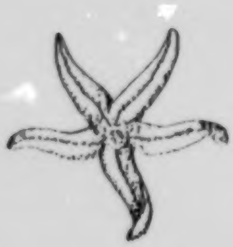
a. mollusk
b. sponge
c. arthropod
d. echinoderm

10



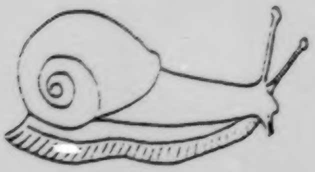
a. reptile
b. bird
c. amphibian
d. mammal

11



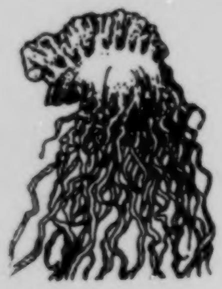
a. sponge
b. echinoderm
c. mollusk
d. coelenterate

12



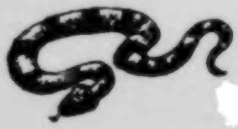
a. amphibian
b. fish
c. mollusk
d. reptile

13



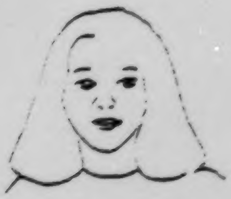
a. protist
b. mollusk
c. echinoderm
d. coelenterate

14



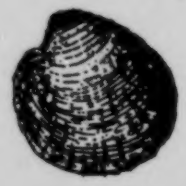
a. segmented worm
b. reptile
c. roundworm
d. flatworm

15



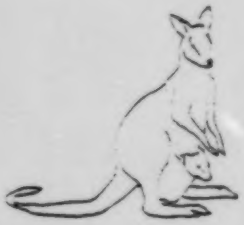
a. mammal
b. bird
c. reptile
d. amphibian

16



a. coelenterate
b. echinoderm
c. mollusk
d. protist

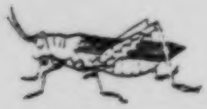
17



a. arthropod
b. reptile
c. amphibian
d. mammal

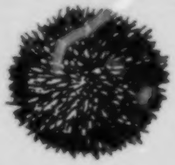
18

TGT GAMESHEET: III.4.2.1 Animal Classification I



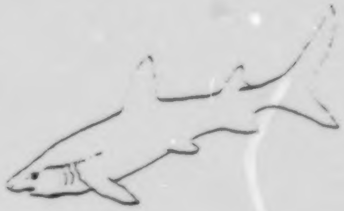
a. arthropod
b. bird
c. mollusk
d. echinoderm

19



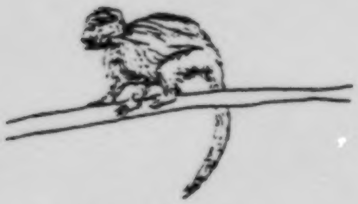
a. arthropod
b. coelenterate
c. echinoderm
d. mollusk

20



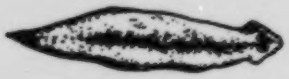
a. amphibian
b. reptile
c. mammal
d. fish

21



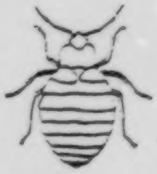
a. mammal
b. bird
c. reptile
d. amphibian

22



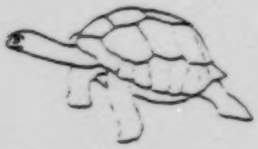
a. roundworm
b. flatworm
c. segmented worm
d. reptile

23



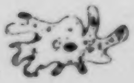
a. arthropod
b. coelenterate
c. amphibian
d. echinoderm

24



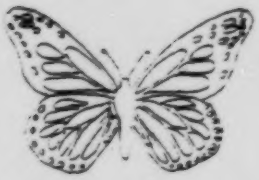
a. mollusk
b. amphibian
c. reptile
d. fish

25



a. coelenterate
b. echinoderm
c. protist
d. mollusk

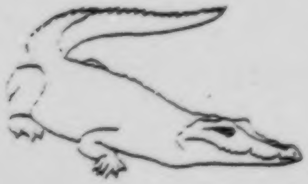
26



a. arthropod
b. coelenterate
c. bird
d. echinoderm

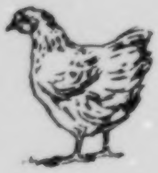
27

TGT GAMESHEET: III.4.2.1 Animal Classification I



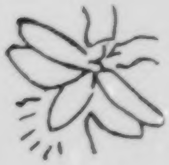
a. amphibian
b. bird
c. mammal
d. reptile

28



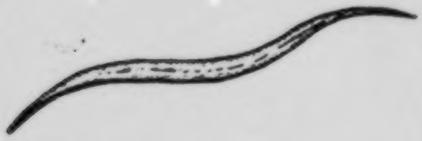
a. amphibian
b. reptile
c. bird
d. mammal

29



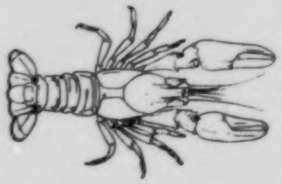
a. bird
b. amphibian
c. arthropod
d. reptile

30



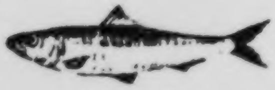
a. segmented worm
b. reptile
c. roundworm
d. flatworm

31



a. arthropod
b. fish
c. amphibian
d. reptile

32



a. arthropod
b. fish
c. amphibian
d. reptile

33

GAMESHEET ANSWERS

III.4.2.1 Animal Classification I

1. d) protist
2. a) amphibian
3. b) mammal
4. b) segmented worm
5. d) mammal
6. c) reptile
7. d) mammal
8. a) arthropod
9. d) bird
10. b) sponge
11. b) bird
12. b) echinoderm
13. c) mollusk
14. d) coelenterate
15. b) reptile
16. a) mammal
17. c) mollusk
18. d) mammal
19. a) arthropod
20. c) echinoderm
21. d) fish
22. a) mammal
23. b) flatworm
24. a) arthropod
25. c) reptile
26. c) protist
27. a) arthropod
28. d) reptile
29. c) bird
30. c) arthropod
31. c) roundworm
32. a) arthropod
33. b) fish

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Classifying Living Things: Animals(II)

Objective: III.4.2.2--Students will identify each organism from its description.

Instructions: This worksheet will help you prepare for the Animal Classification (II) Game. Choose the correct name for each animal described in each item.

TGT WORKSHEET: III.4.2.2 Animal Classification (II)

I am cold-blooded, aquatic, breathe through gills, have scaly skin and fins.

a. perch
b. crab
c. snail
d. frog

1

I am hairy, warm-blooded, give birth to live young, breathe through lungs.

a. squirrel
b. hawk
c. bumblebee
d. spider

2

I have smooth skin, am cold-blooded, my young breathe oxygen from the water through gills, but I have lungs.

a. snake
b. crab
c. frog
d. fish

3

I have three separate body sections, two pairs of wings, and antenna.

a. bumblebee
b. spider
c. centipede
d. crab

4

I have hair-like structures, two nuclei, a mouth opening, but I am only animal-like.

a. ant
b. starfish
c. paramecium
d. bacteria

5

I have a hard shell protecting a soft body. My tentacles move slowly and sometimes I have gills.

a. crab
b. snail
c. turtle
d. worm

6

I am cold-blooded, breathe through lungs, have scaly body and fangs, lay eggs on land, but I have no legs.

a. copperhead snake
b. salamander
c. worm
d. eel

7

I have feathers, wings, and am also warm-blooded.

a. bat
b. wasp
c. dragonfly
d. hawk

8

I have five pairs of legs, two body sections, several feelers, moveable mouth parts, and breathe through gills.

a. octopus
b. blue crab
c. beetle
d. starfish

9

I have four pairs of legs, two body sections. I kill insects. Some of us spin webs or live in holes.

a. grasshopper
b. centipede
c. spider
d. lobster

10

I have spines covering my skin and five arms that spread out from my body like wheel spokes.

a. starfish
b. sponge
c. crab
d. spider

11

I am segmented and have complex body systems such as digestive and nervous systems.

a. snake
b. tapeworm
c. earthworm
d. slug

12

I have pores or openings all over my body. I live in salt water and I have colonies of cells.

a. sea urchin
b. sponge
c. sea anemone
d. jellyfish

13

I am umbrella shaped, transparent, and have tentacles around my mouth.

a. octopus
b. squid
c. spider
d. jellyfish

14

I am warm-blooded with wings, but I have hair and my young are born alive.

a. bat
b. duck
c. owl
d. vulture

15

TGT WORKSHEET: III.4.2.2 Animal Classification (II)

I have compound eyes, six legs, a head, thorax and abdomen, and wings.

a. butterfly
b. crayfish
c. ant
d. grasshopper

16

I am cold-blooded. I have flippers and a hard shell. I spend my entire time at sea but come to shore to lay eggs.

a. seal
b. sea turtle
c. shark
d. toad

17

I live in the sea; I am shaped like a hugh fish, but I have hair, lungs, and produce milk to feed my calf.

a. shark
b. whale
c. elephant
d. hippopotamus

18

I constantly change my shape and move by false feet. I am microscopic and animal-like.

a. paramecium
b. euglena
c. algae
d. amoeba

19

I am simple, microscopic with no nucleus. I am found everywhere. I resemble neither plant nor animal.

a. paramecium
b. euglena
c. amoeba
d. bacteria

20

WORKSHEET ANSWERS

III.4.2.2 Animal Classification (II)

1. a
2. a
3. c
4. a
5. c
6. b
7. a
8. d
9. b
10. c
11. a
12. c
13. b
14. d
15. a
16. d
17. b
18. b
19. d
20. d

TGT GAMESHEET: III.4.2.2 Animal Classification (II)

I live in the sea; I am shaped like a hugh fish; but I have hair, lungs, and produce milk to feed my calf.

a. shark
b. whale
c. elephant
d. hippopotamus

1

I am hairy, warm-blooded, give birth to live young, breathe through lungs.

a. squirrel
b. hawk
c. bumblebee
d. spider

2

I am umbrella shaped, transparent, and have tentacles around my mouth.

a. octopus
b. squid
c. spider
d. jellyfish

3

I have three separate body sections, two pairs of wings and antenna.

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c. centipede
d. crab

4

I have hair-like structures, two nuclei, a mouth opening, but I am only animal-like.

a. ant
b. starfish
c. paramecium
d. bacteria

5

I am warm-blooded with wings, but I have hair and my young are born alive.

a. bat
b. duck
c. owl
d. vulture

6

I am cold-blooded, breathe through lungs, have scaly body and fangs, lay eggs on land; but I have no legs.

a. copperhead snake
b. salamander
c. worm
d. eel

7

I constantly change my shape and move by false feet. I am microscopic and animal-like.

a. paramecium
b. euglena
c. algae
d. amoeba

8

I have five pairs of legs, two body sections, several feelers, movable mouth parts, and breathe through gills.

a. octopus
b. blue crab
c. beetle
d. starfish

9

I am cold-blooded. I have flippers and a hard shell. I spend my entire time at sea but come to shore to lay eggs.

a. seal
b. sea turtle
c. shark
d. toad

10

I have spines covering my skin and five arms that spread out from my body like wheel spokes.

a. starfish
b. sponge
c. crab
d. spider

11

I am segmented and have complex body systems such as digestive and nervous systems.

a. snake
b. tapeworm
c. earthworm
d. slug

12

I have pores or openings all over my body. I live in salt water and I have colonies of cells.

a. sea urchin
b. sponge
c. sea anemone
d. jellyfish

13

I have smooth skin, am cold-blooded; my young breathe oxygen from the water through gills, but I have lungs.

a. snake
b. crab
c. frog
d. fish

14

I have a hard shell protecting a soft body. My tentacles move slowly and sometimes I have gills.

a. crab
b. snail
c. turtle
d. worm

15

TGT GAMESHEET: III.4.2.2 Animal Classification (II)

I have compound eyes, six legs, a head, thorax and abdomen, and wings.

a. butterfly
b. crayfish
c. ant
d. grasshopper

16

I have four pairs of legs, two body sections. I kill insects. Some of us spin webs or live in holes.

a. grasshopper
b. centipede
c. spider
d. lobster

17

I am cold-blooded, aquatic, breathe through gills, have scaly skin and fins.

a. perch
b. crab
c. snail
d. frog

18

I have feathers, wings, and am also warm-blooded.

a. bat
b. wasp
c. dragonfly
d. hawk

19

I am simple, microscopic with no nucleus. I am found everywhere; I resemble neither plant nor animal.

a. paramecium
b. euglena
c. amoeba
d. bacteria

20

GAMESHEET ANSWERS

III.4.2.2 Animal Classification (II)

1. b
2. a
3. d
4. a
5. c
6. a
7. a
8. d
9. b
10. b
11. a
12. c
13. b
14. c
15. b
16. d
17. c
18. a
19. d
20. d

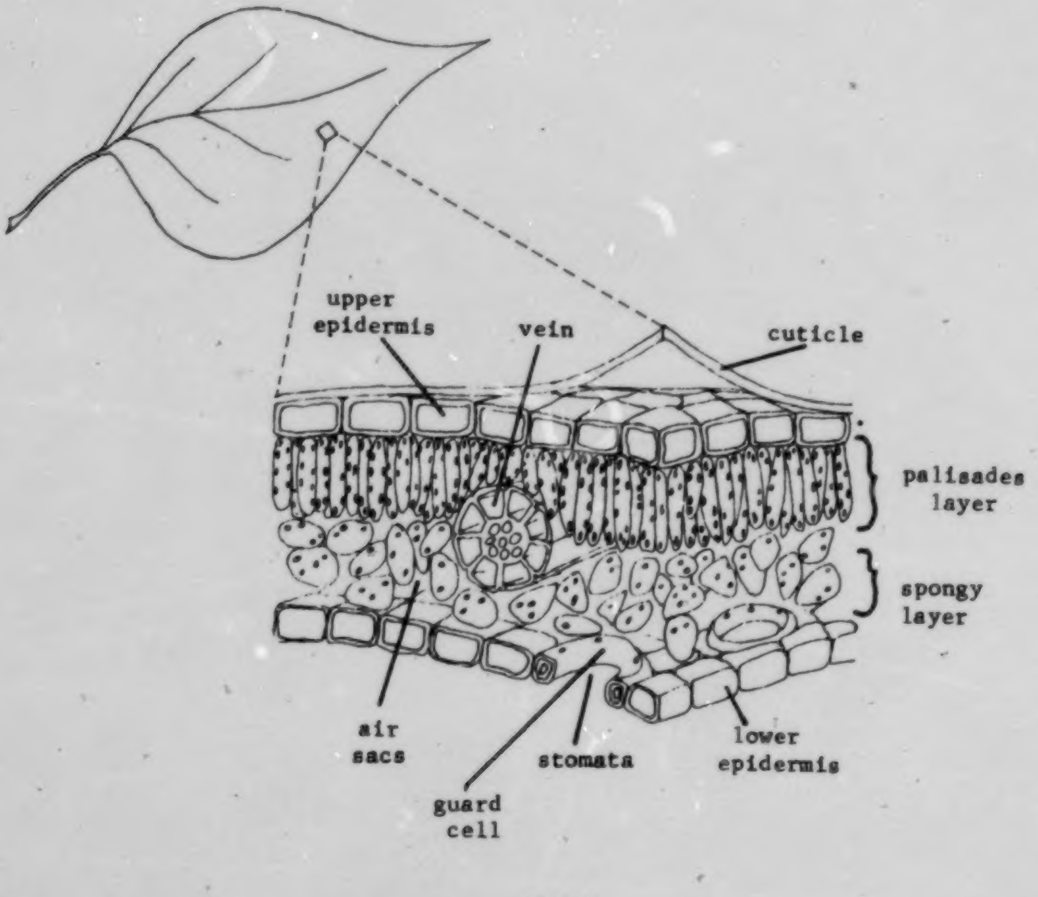
TGT LIFE SCIENCE

UNIT: Life Processes

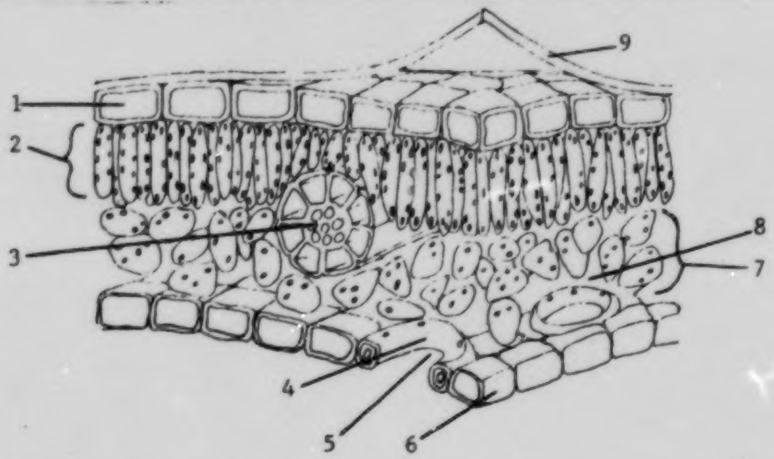
WORKSHEET: Food Making: Leaf Structure

Objective: III.5.1-- Students will identify the structures and function of a typical leaf.

Instructions: This worksheet will prepare you for the Leaf Structure Game. Study the cross-section of the leaf diagram carefully. For items 1-9, match the numbered part of the leaf with its correct name on the worksheet. For items 10-28, name the part of the leaf that performs the described function.


upper epidermis
vein
cuticle
palisades layer
spongy layer
air sacs
stomata
lower epidermis
guard cell

TGT WORKSHEET: III.5.1 The Leaf



The palisade layer is ________. 1	The guard cell is ________. 2	The upper epidermis is ________ 3
The vein is ________. 4	The stomata is ________. 5	The cuticle is ________. 6
The spongy layer is ________. 7	The lower epidermis is ________. 8	The air space is ________. 9
Allow gases to enter and leave the leaf. ________ 10	Protects the lower tissues of a leaf. ________ 11	The cells below the palisade layer that make food. ________ 12
It holds air. ________ 13	The waxy layer that prevents further water loss. ________ 14	Protects the upper tissues of the leaf. ________ 15
The cells in the upper region of the leaf that make food. ________ 16	The openings in the epidermis of the leaf. ________ 17	Transports materials to and from the leaf. ________ 18
The two major parts that contain chloroplasts. ________ and ________ 19	There are air sacs between these cells. ________ 20	The parts that prevent water loss are ________, ________, and ________. 21

TGT WORKSHEET: III.5.1 The Leaf

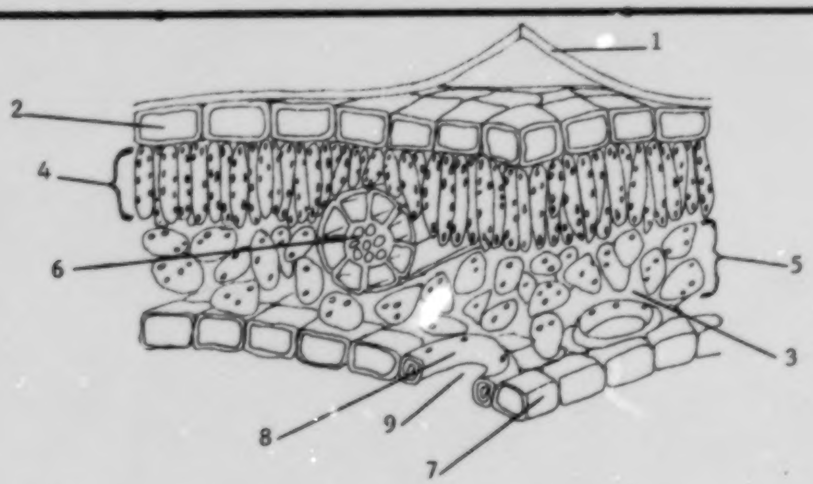
Guard cells are usually located in this part. __________ 22	H_2O and O_2 can leave the leaf through this part. __________ 23	Regulates the opening and closing of the stomata. __________ 24
Most of the photosynthesis takes place in these two parts. __________ 25	Water enters the leaf through this part from the roots. __________ 26	Glucose not used by the leaf is sent to other parts of the plant by this part. __________ 27
The layers of cells that lack chloroplasts are called __________ 28		

WORKSHEET ANSWERS

III.5.1 The Leaf

1. 2
2. 4
3. 1
4. 3
5. 5
6. 9
7. 7
8. 6
9. 8
10. 5 - stomata
11. 6 - lower epidermis
12. 7 - spongy layer
13. 8 - air sac
14. 9 - cuticle
15. 1 - upper epidermis
16. 2 - palisades
17. 5 - stomata
18. 3 - vein
19. 2 & 7 - palisade and spongy layer
20. 7 - spongy layer
21. 9, 6, 1 - cuticle, upper and lower epidermises
22. 6 - lower epidermis
23. 5 - stomata
24. 4 - guard cells
25. 2 & 7 - palisade and spongy layer
26. 3 - vein
27. 3 - vein
28. 1 & 6 - upper and lower epidermises

TGT GAMESHEET: III.5.1 The Leaf



The openings in the epidermis of the leaf. 1	The vein is number ______. 2	The parts that prevent water loss are ______, ______, and ______. 3
The stomata is number ______. 4	The guard cell is number ______. 5	Guard cells are usually located in this part. 6
The layers of cells that lack chloroplasts are called __________. 7	The upper epidermis is number ______. 8	H_2O and O_2 can leave the leaf through this part. 9
The spongy layer is number ______. 10	Transports materials to and from the leaf. 11	Regulates the opening and closing of the stomata. 12
The lower epidermis is number ______. 13	Protects the lower tissues of a leaf. 14	Most of the photosynthesis takes place in these two parts. 15
Air sacs are number ______. 16	The cells below the palisade layer that make food. 17	Water enters the leaf through this part from the roots. 18
Allow gases to enter and leave the leaf. 19	Protects the upper tissues of the leaf. 20	Glucose not used by the leaf is sent to other parts of the plant by this part. 21

TGT GAMESHEET: III.5.1 The Leaf

The palisade layer is number ______. 22	The cells in the upper region of the leaf that make food. 23	The cuticle is number ______. 24

GAMESHEET ANSWERS

III.5.1 The Leaf

1. stomata
2. 6
3. cuticle, upper and lower epidermises
4. 9
5. 8
6. lower epidermis
7. upper and lower epidermises
8. 2
9. stomata
10. 5
11. vein
12. guard cells
13. 7
14. lower epidermis
15. palisade and spongy layer
16. 3
17. spongy layer
18. vein
19. stomata
20. upper epidermis
21. vein
22. 4
23. palisades
24. 1

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Food Making: Photosynthesis

Objective: III.5.2--a. Students will identify the steps in the food making process.

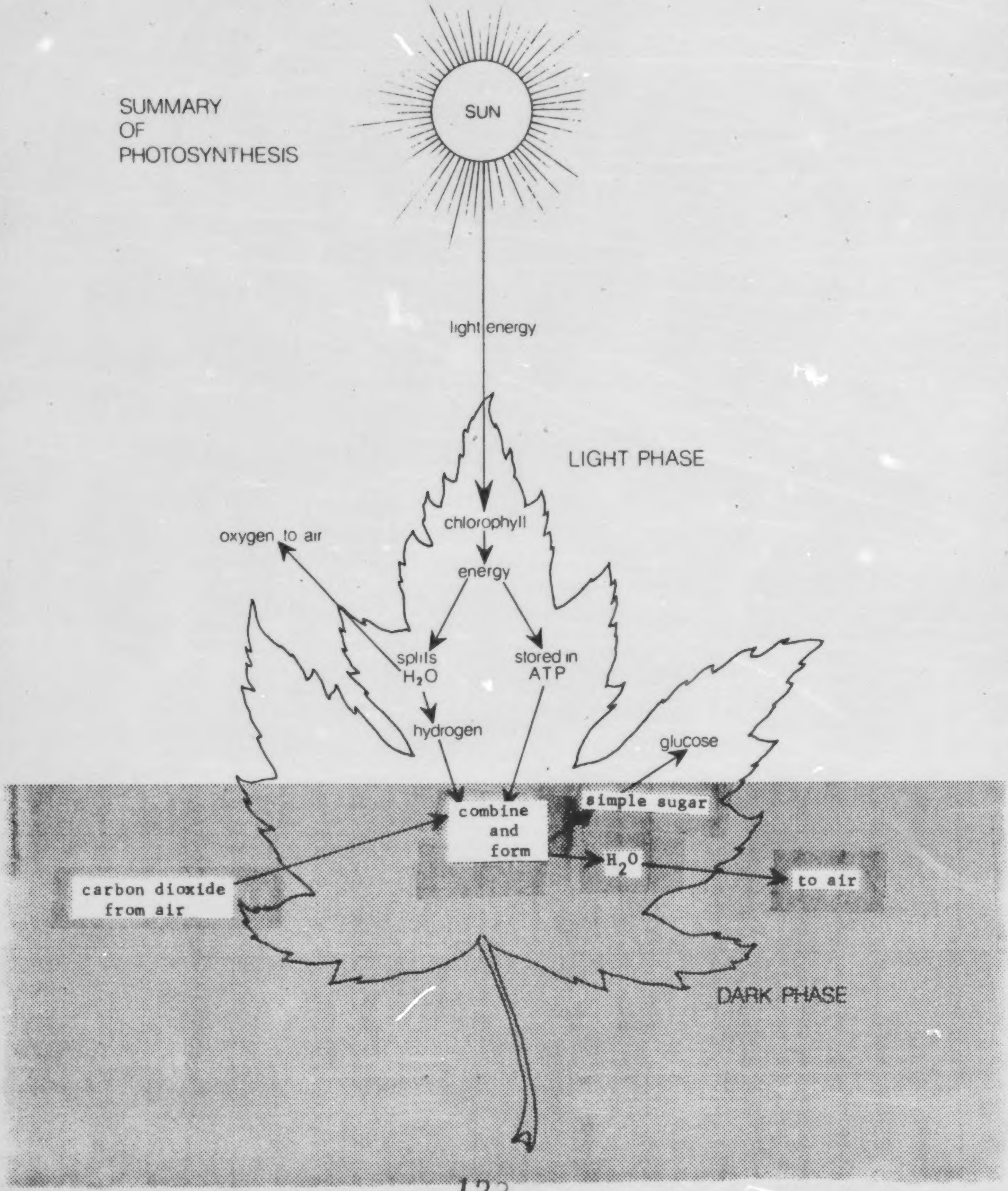
b. Students will compare the light and dark phases of photosynthesis.

Instructions: This worksheet will help you prepare for the Photosynthesis Game. Study the diagram on the next page carefully to assist you in answering each item. For items 1-24, choose the correct answer from the choices provided. For items 25-30, write the word or formula that completes the summary of photosynthesis.

Vocabulary:

ATP
chlorophyll
dark phase
energy
glucose
light phase
photosynthesis

TGT WORKSHEET: III.5.2 Photosynthesis


SUMMARY
OF
PHOTOSYNTHESIS
SUN
light energy
LIGHT PHASE
chlorophyll
energy
oxygen to air
splits H_2O
stored in ATP
hydrogen
glucose
simple sugar
combine and form
H_2O
to air
carbon dioxide from air
DARK PHASE

TGT WORKSHEET: III.5.2 Photosynthesis

The organ of the plant in which photosynthesis most often takes place is the

a. stem
b. root
c. leaf

1

Plants need which of the following to carry on photosynthesis?

a. O_2, CO_2, chlorophyll

b. H_2O, CO_2, light energy, chlorophyll

c. H_2O, O_2, light energy, sugar

2

The energy stored in plants comes from

a. soil
b. air
c. sunlight

3

The first phase of photosynthesis is sometimes called the

a. light phase
b. dark phase
c. chlorophyll phase

4

The oxygen released during photosynthesis comes from the

a. chlorophyll
b. carbon dioxide
c. water

5

Photosynthesis takes place in the __________ of a plant cell.

a. cell wall
b. cytoplasm
c. chloroplast

6

The energy from the sun is stored in a chemical compound called

a. ATP
b. CO_2
c. H_2O

7

The second stage of photosynthesis is called the

a. light phase
b. dark phase
c. chlorophyll phase

8

The phase of photosynthesis requiring chlorophyll is the

a. light phase
b. dark phase
c. chlorophyll phase

9

Hydrogen combines with carbon dioxide to make

a. starch
b. simple sugar
c. glucose

10

The energy for the second stage of photosynthesis is stored in

a. ATP
b. sunlight
c. hydrogen

11

Water is released to the air during the

a. light phase
b. dark phase
c. chlorophyll phase

12

Animals depend on green plants for

a. oxygen and carbon dioxide
b. carbon dioxide and food
c. food and oxygen

13

The final products of photosynthesis are

a. glucose, O_2 and H_2O vapor
b. simple sugar and water
c. oxygen and simple sugar

14

Water molecules are split

a. in the dark phase
b. in the light phase
c. in the chlorophyll phase

15

TGT WORKSHEET: III.5.2 Photosynthesis

Plants grown in darkness for a time do not develop

a. stomata
b. roots
c. chlorophyll

16

During the light phase of photosynthesis, light energy is converted into

a. water
b. chloroplast
c. chemical energy

17

Using the energy from ATP, hydrogen and carbon dioxide combine during the

a. light phase
b. dark phase
c. chlorophyll phase

18

A substance that is necessary for photosynthesis and is given off as a result of photosynthesis is

a. oxygen
b. carbon dioxide
c. water

19

A final product of photosynthesis released to the atmosphere during the light phase is

a. hydrogen
b. oxygen
c. carbon dioxide

20

The stage of photosynthesis that does not require light as a source of energy is the

a. chlorophyll phase
b. light phase
c. dark phase

21

The green compound found in green plants which uses the energy of the sun to split the water molecule is

a. chloroplast
b. carbon dioxide
c. chlorophyll

22

The two final products of photosynthesis produced during the dark phase are

a. hydrogen and carbon dioxide
b. glucose and water
c. oxygen and glucose

23

The source of energy for the dark phase is

a. sunlight
b. ATP
c. chlorophyll

24

Items 25-30: Summarize the entire process of photosynthesis in words.

Green plants containing chlorophyll + 25. ________ + 26. ________ + 27. ________

produces→ 28. ________ + 29. ________ + 30. ________

WORKSHEET ANSWERS

III.5.2 Photosynthesis

1. c) leaf
2. b) H_2O, CO_2, light energy, chlorophyll
3. c) sunlight
4. a) light phase
5. c) water
6. c) chloroplast
7. a) ATP
8. b) dark phase
9. a) light phase
10. b) simple sugar
11. a) ATP
12. b) dark phase
13. c) food and oxygen
14. a) glucose, O_2, and H_2O vapor
15. b) in the light phase
16. c) chlorophyll
17. c) chemical energy
18. b) dark phase
19. c) water
20. b) oxygen
21. c) dark phase
22. c) chlorophyll
23. b) glucose and water
24. b) ATP
25. carbon dioxide
26. water } any order
27. light energy
28. glucose
29. oxygen } any order
30. water

TGT GAMESHEET: III.5.2 Photosynthesis

Water is released to the air during the

a. light phase
b. dark phase
c. chlorophyll phase

1

Plants need which of the following to carry on photosynthesis?

a. O_2, CO_2, H_2O, chlorophyll
b. H_2O, CO_2, light energy, chlorophyll
c. H_2O, sugar, O_2, light energy

2

A final product of photosynthesis released to the atmosphere during the light phase is

a. hydrogen
b. oxygen
c. carbon dioxide

3

The first phase of photosynthesis is sometimes called the

a. light phase
b. dark phase
c. chlorophyll phase

4

The oxygen released during photosynthesis comes from the

a. chlorophyll
b. CO_2 (carbon dioxide)
c. water

5

During the light phase of photosynthesis, light energy is converted into

a. water
b. chloroplast
c. chemical energy

6

Animals depend on green plants for

a. oxygen and carbon dioxide
b. carbon dioxide and food
c. food and oxygen

7

The stage of photosynthesis that does not require light as a source of energy is the

a. chlorophyll phase
b. light phase
c. dark phase

8

The phase of photosynthesis requiring chlorophyll is the

a. light phase
b. dark phase
c. chlorophyll phase

9

Hydrogen combines with carbon dioxide to make

a. starch
b. simple sugar
c. glucose

10

The energy for the second stage of photosynthesis is stored in

a. ATP
b. sunlight
c. hydrogen

11

The source of energy for the dark phase is

a. sunlight
b. ATP
c. chlorophyll

12

A substance that is necessary for photosynthesis and is given off as a result of photosynthesis is

a. oxygen
b. carbon dioxide
c. water

13

The final products of photosynthesis are

a. glucose, H_2O vapor and O_2
b. simple sugar and water
c. oxygen and simple sugar

14

Water molecules are split

a. in the dark phase
b. in the light phase
c. in the chlorophyll phase

15

GAMESHEET ANSWERS

III.5.2 Photosynthesis

1. b) dark phase
2. b) H_2O, CO_2, light energy, chlorophyll
3. b) oxygen
4. a) light phase
5. c) water
6. c) chemical energy
7. c) food and oxygen
8. c) dark phase
9. a) light phase
10. b) simple sugar
11. a) ATP
12. b) ATP
13. c) water
14. a) glucose, H_2O vapor, and O_2
15. b) in the light phase
16. c) chlorophyll
17. c) chloroplast
18. b) dark phase
19. c) leaf
20. c) chlorophyll
21. c) sunlight
22. b) glucose and water
23. a) ATP
24. b) dark phase
25. water
26. light any order
27. carbon dioxide
28. glucose
29. water vapor any order
30. oxygen

TGT LIFE SCIENCE

UNIT: Life Processes

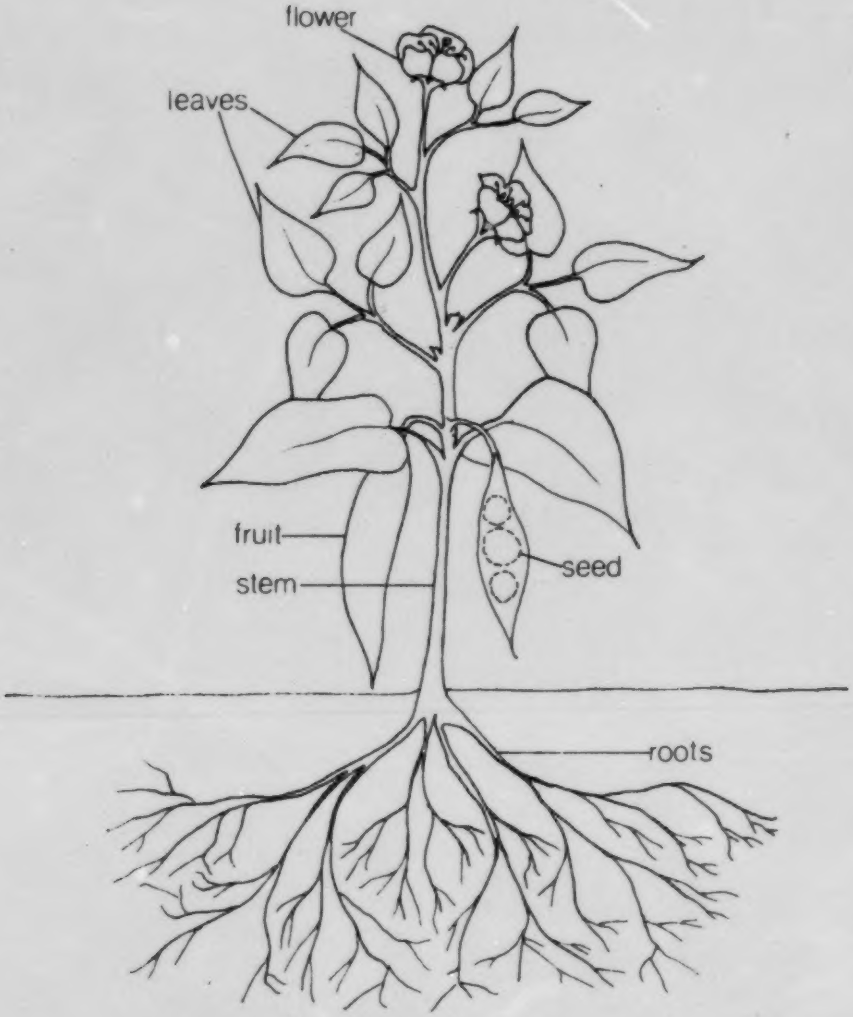
WORKSHEET: Food Making: Edible Plant Parts

Objective: III.5.3-- Students will classify food or beverage sources as the edible parts of flowering plants.

Instructions: This worksheet will help you prepare for the Edible Plant Parts Game. Study the diagram and vocabulary terms carefully. Match the part of the plant with each item on the worksheet.

Vocabulary:

flower
fruit
leaves
root
seed
stem



TGT GAMESHEET: III.5.2 Photosynthesis

Plants grown in darkness for a time do not develop

a. stomata
b. roots
c. chlorophyll

16

Photosynthesis takes place in the __________ of a plant cell.

a. cell wall
b. cytoplasm
c. chloroplast

17

Using the energy from ATP, hydrogen and carbon dioxide combine during the

a. light phase
b. dark phase
c. chlorophyll phase

18

The organ of the plant in which photosynthesis most often takes place is the

a. stem
b. root
c. leaf

19

The green compound found in green plants which uses the energy of the sun to split the water molecules is

a. chloroplast
b. carbon dioxide
c. chlorophyll

20

The energy stored in plants comes from

a. soil
b. air
c. sunlight

21

The two final products of photosynthesis produced during the dark phase are

a. hydrogen and carbon dioxide
b. glucose and water
c. oxygen and glucose

22

The energy from the sun is stored in a chemical compound called

a. ATP
b. CO_2
c. H_2O

23

The second stage of photosynthesis is sometimes called the

a. light phase
b. dark phase
c. chlorophyll phase

24

Items 25-30: Summarize the entire process of photosynthesis in words.

Green plants containing chlorophyll + 25. __________ + 26. __________ + 27. __________

produces → 28. __________ + 29. __________ + 30. __________

TGT WORKSHEET: III.5.3 Edible Plant Parts

peanut 1	cabbage 2	carrot 3
rice 4	white potato 5	apple 6
kale 7	turnip 8	cucumber 9
sweet potato 10	onion 11	lettuce 12
cauliflower 13	pepper 14	lima bean 15
spinach 16	tea 17	peas 18
coffee 19	cherry 20	broccoli 21
cocoa 22	tomato 23	radish 24
banana 25	beets 26	garlic 27
celery 28	walnut 29	plum 30

WORKSHEET ANSWERS

III.5.3 Edible Plant Parts

1. seed
2. leaves
3. root
4. seed
5. stem
6. fruit
7. leaves
8. root
9. fruit
10. root
11. stem
12. leaves
13. flower
14. fruit
15. seed
16. leaves
17. leaves
18. seed
19. seed
20. fruit
21. leaves
22. seed
23. fruit
24. root
25. fruit
26. root
27. stem
28. stem
29. fruit
30. fruit

TGT GAMESHEET: III.5.3 Edible Plant Parts

pineapple 1	collard greens 2	artichoke 3
white potato 4	oats 5	peach 6
turnip 7	peanut 8	celery 9
rice 10	walnut 11	corn 12
tomato 13	lima beans 14	sweet potato 15
peppermint 16	watercress 17	rhubarb 18
cantaloupe 19	olive 20	broccoli 21
squash 22	beets 23	watermelon 24
onion 25	cauliflower 26	Brussel sprouts 27
sugar cane 28	kidney beans 29	cranberries 30

GAMESHEET ANSWERS

III.5.3 Edible Plant Parts

1. fruit
2. leaves
3. flower
4. stem
5. seed
6. fruit
7. root
8. seed
9. stem
10. seed
11. fruit
12. seed
13. fruit
14. seed
15. root
16. leaves
17. leaves
18. stem
19. fruit
20. fruit
21. flower
22. fruit
23. root
24. fruit
25. stem
26. flower
27. leaves
28. stem
29. seed
30. fruit

TGT LIFE SCIENCE

UNIT: Life Processes

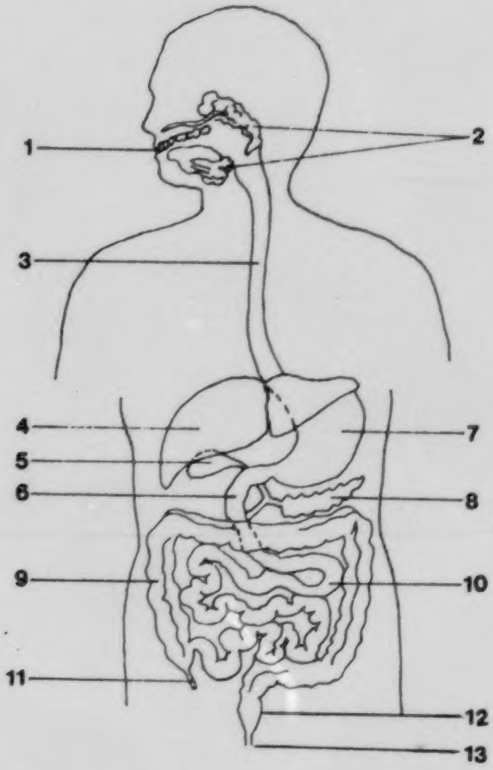
WORKSHEET: Digestion: The Digestive System

Objective: III.6.1--Students will identify the organs of a typical drawing of the human digestive system and recognize their functions.

Instructions: This worksheet will help you prepare for the Digestive System Game. Study the diagram carefully. For items 1-13, identify each numbered part of the diagram. For items 14-27, match the digestive part with its function.

Vocabulary:

Digestive Part
a. anus
b. appendix
c. esophagus
d. gall bladder
e. large intestine
f. liver
g. mouth
h. pancreas
i. rectum
j. salivary glands
k. small intestine
l. stomach
m. duodenum



TGT WORKSHEET: III.6.1 The Digestive System

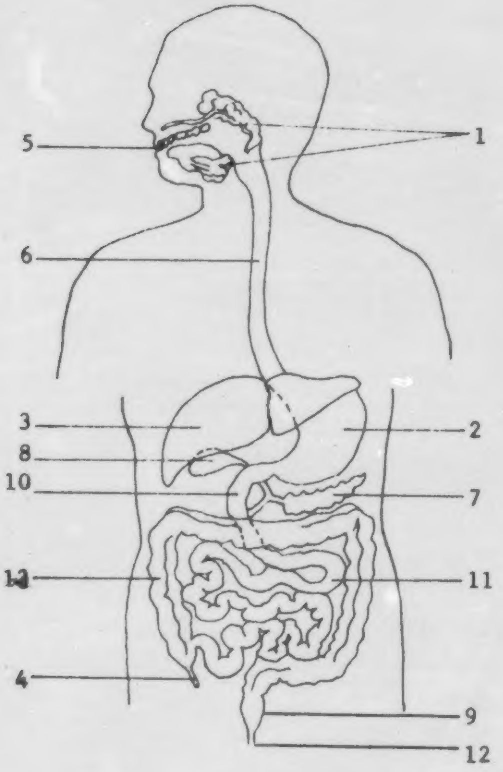
Part No. 10 is ____________ 1	Part No. 12 is ____________ 2	Part No. 9 is ____________ 3
Part No. 7 is ____________ 4	Part No. 13 is ____________ 5	Part No. 11 is ____________ 6
Part No. 4 is ____________ 7	Part No. 6 is ____________ 8	Part No. 1 is ____________ 9
Part No. 5 is ____________ 10	Part No. 8 is ____________ 11	Part No. 3 is ____________ 12
Part No. 2 is ____________ 13	Has no known function in the human body. ____________ 14	The sac which stores bile. ____________ 15
A long tube which carries food from the throat to the stomach. ____________ 16	Where most of the chemical digestion takes place. ____________ 17	Where saliva begins the chemical digestion of some carbohydrates. ____________ 18
The chemical digestion of some proteins begins in this storage organ. ____________ 19	A gland which makes digestive juice containing many enzymes. ____________ 20	The digestive juices from the liver and pancreas are released into this section of the small intestine. ____________ 21
Absorbs water and passes solid wastes from the body. ____________ 22	These glands produce saliva. ____________ 23	Releases solid waste from the body. ____________ 24
A large gland that makes bile. ____________ 25	Solid waste is stored in this area. ____________ 26	The villi of this organ greatly increase the surface area for absorbing food molecules. ____________ 27

WORKSHEET ANSWERS

III.6.1 The Digestive System

1. k - small intestine
2. i - rectum
3. e - large intestine
4. l - stomach
5. a - anus
6. b - appendix
7. f - liver
8. m - duodenum
9. g - mouth
10. d - gall bladder
11. h - pancreas
12. c - esophagus
13. j - salivary glands
14. b - appendix
15. d - gall bladder
16. c - esophagus
17. k - small intestine
18. g - mouth
19. l - stomach
20. h - pancreas
21. m - duodenum
22. e - large intestine
23. j - salivary glands
24. a - anus
25. f - liver
26. i - rectum
27. k - small intestine

TGT GAMESHEET: III.6.1 The Digestive System



Digestive Part

a. anus
b. appendix
c. esophagus
d. gall bladder
e. large intestine
f. liver
g. mouth
h. pancreas
i. rectum
j. salivary glands
k. small intestine
l. stomach
m. duodenum

TGT GAMESHEET: III.6.1 The Digestive System

Absorbs water and passes solid wastes from the body. ________ 1	Part No. 2 is ________ 2	Solid waste is stored in this area. ________ 3
A long tube which carries food from the throat to the stomach. ________ 4	Part No. 3 is ________ 5	Part No. 11 is ________ 6
Part No. 4 is ________ 7	The villi of this organ greatly increase the surface area for absorbing food molecules. ________ 8	The chemical digestion of some proteins begins in this storage organ. ________ 9
The digestive juices from the liver and pancreas are released into this section of the small intestine. ________ 10	Part No. 8 is ________ 11	These glands produce saliva. ________ 12
A large gland that makes bile. ________ 13	Has no known function in the human body. ________ 14	Part No. 1 is ________ 15
Part No. 12 is ________ 16	Where most of the chemical digestion takes place. ________ 17	Where saliva begins the chemical digestion of some carbohydrates. ________ 18
Releases solid waste from the body. ________ 19	A gland which makes digestive juice containing many enzymes. ________ 20	Part No. 5 is ________ 21
Part No. 7 is ________ 22	Part No. 10 is ________ 23	Part No. 9 is ________ 24
Part No. 13 is ________ 25	The sac which stores bile. ________ 26	Part No. 6 is ________ 27

GAMESHEET ANSWERS

III.6.1 The Digestive System

1. e - large intestine
2. l - stomach
3. i - rectum
4. c - esophagus
5. f - liver
6. k - small intestine
7. b - appendix
8. k - small intestine
9. l - stomach
10. m - duodenum
11. d - gall bladder
12. j - salivary glands
13. f - liver
14. b - appendix
15. j - salivary glands
16. a - anus
17. k - small intestine
18. g - mouth
19. a - anus
20. h - pancreas
21. g - mouth
22. h - pancreas
23. m - duodenum
24. i - rectum
25. e - large intestine
26. d - gall bladder
27. c - esophagus

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Digestion: Chemical Digestion

Objective: III.6.2--a. Students will identify the types of nutrients present in a meal.

b. Students will identify where each step of digestion takes place and the digestive juices that act upon proteins, fats, and carbohydrates.

c. Students will identify the end products of protein, fat and carbohydrate digestion and the ways in which they are carried to and absorbed by the body cells.

Instructions: This worksheet will help you prepare for the Chemical Digestion Game. Read the short paragraph and study the chart. Choose the correct letter for each item on the answer sheet.

Vocabulary:

absorption
amino acid
carbohydrates (starch, sugar)
cellulose
enzyme
fatty acids
fats
gland
glycerol
protein
roughage
simple sugars
villi

TGT WORKSHEET: III.6.2 Chemical Digestion

The following chart summarizes the process of human chemical digestion.

Organ	Digestive Juice	Gland Where Juice is Made	General Process
Mouth	Saliva	Salivary Glands	Beginning of starch digestion
Stomach	Gastric Juice	Glands in stomach wall	Beginning of protein digestion
Small Intestine	Bile	Liver	Helps the fat-digesting pancreatic enzyme
	Pancreatic	Pancreas	Continuation of protein digestion Continuation of starch digestion Fat digestion completed
	Intestinal Juice	Glands in wall of the small intestine	Protein and carbohydrate digestion completed

A Delicious Lunch

Suppose you had a hamburger with lettuce, tomatoes, cheese, onions, and pickles on a roll and glass of milk for lunch. What happens to the sandwich and milk, as they pass through your digestive system?

TGT WORKSHEET: III.6.2 Chemical Digestion

What major food nutrient is cheese?

a. starch
b. sugar
c. protein
d. fat

1

What two major nutrients is the hamburger meat made of?

a. starch and protein
b. protein and fat
c. starch and sugars
d. fats and sugars

2

The roll is mainly a:

a. fat
b. starch
c. protein
d. sugar

3

The tomato is mainly a:

a. fat
b. carbohydrate
c. protein

4

The milk is mainly a:

a. fat
b. sugar
c. starch
d. protein

5

Which part(s) of the sandwich is almost indigestible?

a. lettuce
b. onion
c. pickles
d. all of the above

6

Which digestive juice moistens and softens the hamburger in the mouth?

a. gastric juice
b. saliva
c. bile
d. pancreatic juice

7

The digestion of the hamburger meat and cheese begins in the:

a. mouth
b. stomach
c. small intestine
d. duodenum

8

The digestion of the roll begins in the:

a. mouth
b. stomach
c. small intestine
d. duodenum

9

The digestion of the tomato begins in the:

a. mouth
b. stomach
c. duodenum
d. small intestine

10

The digestion of the fat in the hamburger meat begins in the:

a. mouth
b. stomach
c. duodenum
d. small intestine

11

The digestive juice that contains an enzyme to begin starch digestion in the mouth is:

a. gastric juice
b. saliva
c. bile
d. intestinal juice

12

The digestive juice that breaks up fats into tiny droplets is:

a. gastric juice
b. saliva
c. bile
d. pancreatic juice

13

The digestive juice that contains enzymes to begin the digestion of protein is:

a. gastric juice
b. bile
c. pancreatic juice
d. intestinal juice

14

The digestive juice that contains an enzyme to complete the digestion of fats is:

a. gastric juice
b. bile
c. pancreatic juice
d. intestinal juice

15

TGT WORKSHEET: III.6.2 Chemical Digestion

The digestive juice that contains enzymes to complete the digestion of carbohydrates and proteins is:

a. gastric juice
b. bile
c. pancreatic juice
d. intestinal juice

16

Where is the digestion of all foods completed?

a. mouth
b. stomach
c. duodenum
d. small intestine

17

The end product of fat digestion is:

a. amino acids and fatty acids
b. fatty acids and glycerol
c. amino acids and glycerol
d. fatty acids and cellulose

18

The end product of protein digestion is:

a. simple sugars
b. amino acids
c. fatty acids
d. glycerol

19

The end product of carbohydrate digestion is:

a. simple sugars
b. amino acids
c. fatty acids
d. glycerol

20

After digestion of digestible foods is completed, the indigestible foods, excess digestive juice, etc., move to the:

a. liver
b. gall bladder
c. stomach
d. large intestine

21

The end products of digestion are absorbed through the wall of the:

a. liver
b. gall bladder
c. small intestine
d. large intestine

22

The end products that are absorbed directly into the bloodstream are:

a. amino acids and fatty acids
b. fatty acids and glycerol
c. amino acids and simple sugars
d. fatty acids and simple sugars

23

The end products that must diffuse directly into the lymphatic system before they eventually empty into the blood stream are:

a. amino acids and fatty acids
b. fatty acids and glycerol
c. amino acids and simple sugars
d. fatty acids and simple sugars

24

The very small finger-like projections on the lining of the small intestine that absorb digested foods are:

a. mucus
b. roughage
c. villi
d. quardeels

25

What is absorbed from undigested food and returned to the body?

a. protein
b. waste
c. water
d. fats

26

WORKSHEET ANSWERS

III.6.2 Chemical Digestion

1. c) protein
2. b) protein and fat
3. b) starch
4. b) carbohydrate
5. d) protein
6. d) all of the above
7. b) saliva
8. b) stomach
9. a) mouth
10. c) duodenum
11. c) duodenum
12. b) saliva
13. c) bile
14. a) gastric juice
15. c) pancreatic juice
16. d) intestinal juice
17. d) small intestine
18. b) fatty acids and glycerol
19. b) amino acids
20. a) simple sugars
21. d) large intestine
22. c) small intestine
23. c) amino acids and simple sugars
24. b) fatty acids and gylcerol
25. c) villi
26. c) water

TGT GAMESHEET: III.6.2 Chemical Digestion

The end product of carbohydrate digestion is:

a. simple sugars
b. amino acids
c. fatty acids
d. glycerol

1

The digestion of the roll begins in the:

a. mouth
b. stomach
c. small intestine
d. duodenum

2

The roll is mainly a:

a. fat
b. starch
c. protein
d. sugar

3

The tomato is mainly a:

a. fat
b. carbohydrate
c. protein

4

The milk is mainly a:

a. fat
b. sugar
c. starch
d. protein

5

The end product of protein digestion is:

a. simple sugars
b. amino acids
c. fatty acids
d. glycerol

6

The end products of digestion are absorbed through the wall of the:

a. liver
b. gall bladder
c. small intestine
d. large intestine

7

The digestion of the hamburger meat and cheese begins in the:

a. mouth
b. stomach
c. small intestine
d. duodenum

8

What two major nutrients is the hamburger meat made of?

a. starch and protein
b. protein and fat
c. starch and sugars
d. fats and sugars

9

What is absorbed from undigested food and returned to the body?

a. protein
b. waste
c. water
d. fats

10

The very small finger-like projections on the lining of the small intestine that absorb digested food are:

a. mucus
b. roughage
c. villi
d. duodenum

11

The digestive juice that contains an enzyme to begin starch digestion in the mouth is:

a. gastric juice
b. saliva
c. bile
d. intestinal juice

12

The digestive juice that breaks up fats into tiny droplets is:

a. gastric juice
b. saliva
c. bile
d. pancreatic juice

13

The digestive juice that contains enzymes to begin the digestion of protein is:

a. gastric juice
b. bile
c. pancreatic juice
d. intestinal juice

14

Which part(s) of the sandwich is almost indigestible?

a. lettuce
b. onion
c. pickles
d. all of the above

15

TGT GAMESHEET: III.6.2 Chemical Digestion

The digestion of the fat in the hamburger meat begins in the:

a. mouth
b. stomach
c. duodenum
d. small intestine

16

Where is the digestion of all food completed?

a. mouth
b. stomach
c. duodenum
d. small intestine

17

After digestion of digestible foods is completed, the indigestible foods, excess digestive juice, etc., move to the:

a. liver
b. gall bladder
c. stomach
d. large intestine

18

The digestion of the tomato begins in the:

a. mouth
b. stomach
c. duodenum
d. small intestine

19

What major food nutrient is cheese?

a. starch
b. sugar
c. protein
d. fat

20

The digestive juice that contains enzymes to complete the digestion of carbohydrates and protein is:

a. gastric juice
b. bile
c. pancreatic juice
d. intestinal juice

21

Which digestive juice moistens and softens the hamburger in the mouth?

a. gastric juice
b. saliva
c. bile
d. pancreatic juice

22

The end products that are absorbed directly into the bloodstream are:

a. amino acids and fatty acids
b. fatty acids and glycerol
c. amino acids and simple sugars
d. fatty acids and simple sugars

23

The end products that must diffuse directly into the lymphatic system before they eventually empty into the blood stream are:

a. amino acids and fatty acids
b. fatty acids and glycerol
c. amino acids and simple sugars
d. fatty acids and simple sugars

24

The digestive juice that contains an enzyme to complete the digestion of fat is:

a. gastric juice
b. bile
c. pancreatic juice
d. intestinal juice

25

The end product of fat digestion is:

a. amino acid and fatty acids
b. fatty acids and glycerol
c. amino acids and glycerol
d. fatty acids and cellulose

26

GAMESHEET ANSWERS

III.6.2 Chemical Digestion

1. a) simple sugars
2. a) mouth
3. b) starch
4. b) carbohydrate
5. d) protein
6. b) amino acids
7. c) small intestine
8. b) stomach
9. b) protein and fat
10. c) water
11. c) villi
12. b) saliva
13. c) bile
14. a) gastric juice
15. d) all of the above
16. c) duodenum
17. d) small intestine
18. d) large intestine
19. c) duodenum
20. c) protein
21. d) intestinal juice
22. b) saliva
23. c) amino acids and simple sugars
24. b) fatty acids and glycerol
25. c) pancreatic juice
26. b) fatty acids and glycerol

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Transport in Living Things: Plants

Objective: III.7.1--a. Students will identify the major function of each plant organ.

b. Students will identify the structure and function of the two main parts of a plant's transport system.

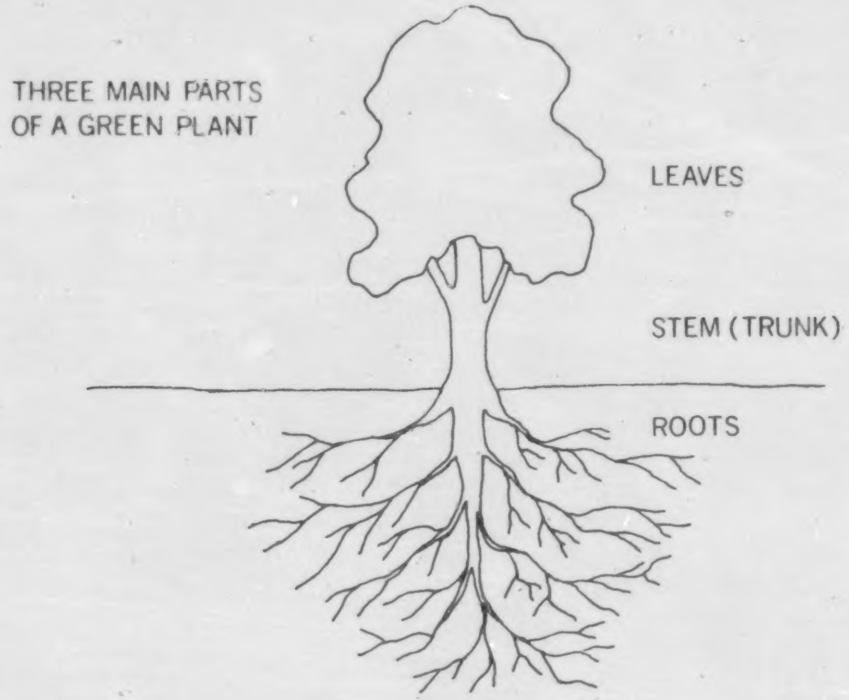
c. Students will compare vascular systems of a woody plant and an herb (herbaceous) plant.

Instructions: This worksheet will help you prepare for the Plant Transport Game. Study the diagrams carefully. Choose the correct answer for each item on the worksheet.

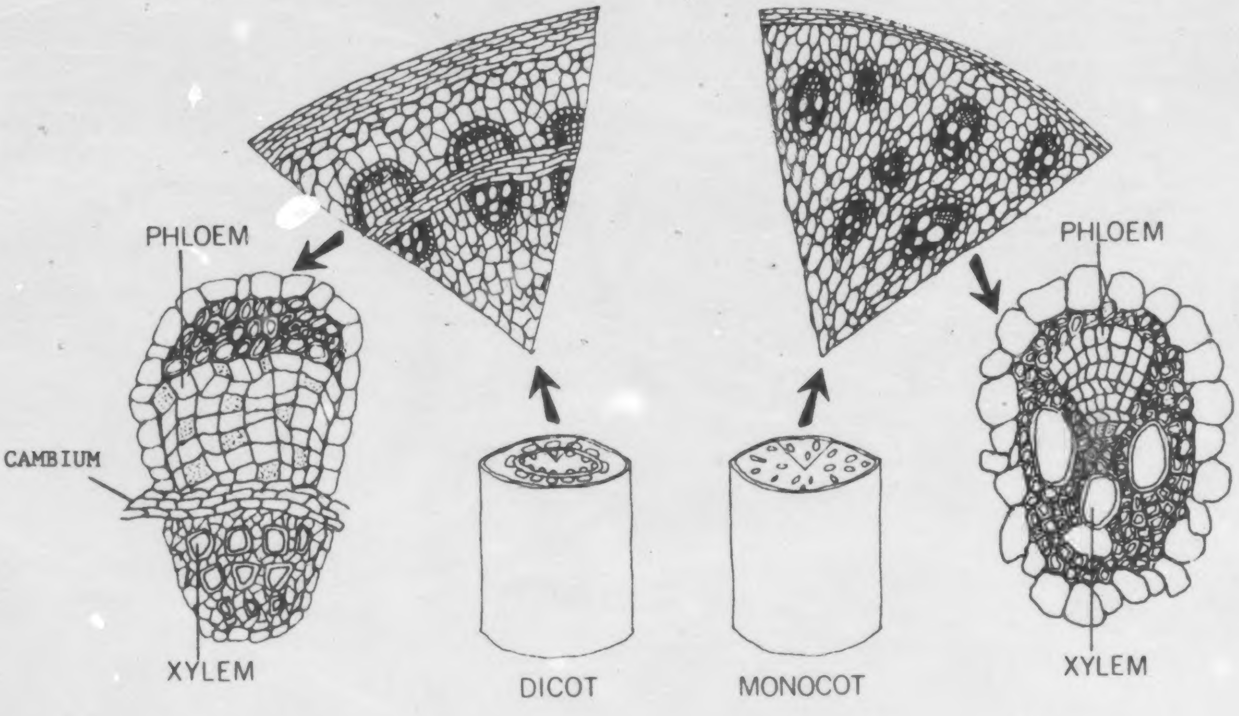
Vocabulary:

cambium
dicot
herb plant (herbaceous)
leaves
monocot
phloem
stems
vascular system
woody stem
xylem
sap

TGT WORKSHEET: III.7.1 Plant Transport


THREE MAIN PARTS OF A GREEN PLANT
LEAVES
STEM (TRUNK)
ROOTS

THE ARRANGEMENT OF XYLEM AND PHLOEM IN DICOT AND MONOCOT STEMS


PHLOEM
CAMBIUM
XYLEM
DICOT
MONOCOT
PHLOEM
XYLEM

TGT WORKSHEET: III.7.1 Plant Transport

Anchor the plant in the ground.

a. leaves
b. stems
c. roots

1

Connects the roots and the leaves.

a. flower
b. stem
c. wood

2

Absorb water and minerals from the soil.

a. roots
b. leaves
c. stems

3

Supports the plant and produces leaves.

a. root
b. vascular tissue
c. stem

4

The network of tubelike vessels which transports food.

a. transport system
b. vascular system
c. water system

5

The major food-making organs of a plant.

a. roots
b. stems
c. leaves

6

Conduct water and minerals up and down the plant.

a. roots
b. stems
c. leaves

7

The two main parts of the vascular system.

a. xylem and phloem
b. fruit and leaves
c. dividing tissue and phloem

8

The tissue that transports water and minerals upward in a plant.

a. xylem
b. phloem
c. dividing tissue

9

The vascular system extends from

a. roots through stem
b. stems through leaves
c. roots through leaves

10

The tissue that transports food and minerals up and down.

a. xylem
b. phloem
c. dividing tissue

11

During the winter, food is stored in the

a. roots and leaves
b. stems and roots
c. leaves and stems

12

A hardy, rigid plant that lives from year to year.

a. herb plant
b. xylem plant
c. woody plant

13

A plant with a soft, green stem that lives for a year or so.

a. herb plant
b. xylem plant
c. woody plant

14

In woody plants, the xylem and phloem are arranged in

a. scattered bundles
b. rings
c. squares

15

TGT WORKSHEET: III.7.1 Plant Transport

In monocot stems, the xylem and phloem are arranged in

a. scattered bundles
b. rings
c. squares

16

In plants, food is stored as

a. sugar
b. starch
c. protein

17

Grasses, vegetables, and some flowering plants are examples of

a. woody plants
b. xylem plants
c. herb plants

18

In the spring, the food stored by plants is changed from

a, sugar to starch
b. starch to sugar
c. sugar to protein

19

Oaks, maples and shrubs are examples of

a. woody plants
b. xylem plants
c. herb plants

20

Herb plants are

a. dicots
b. monocots
c. both a and b

21

Water is constantly escaping from a plant through the

a, roots
b. leaves
c. stems

22

Woody plants are

a. dicots
b. monocots
c. both a and b

23

Water and dissolved minerals form

a. xylem
b. phloem
c. sap

24

A plant whose stem has a lot of supportive and vascular tissue.

a. herb plant
b. woody plant
c. xylem plant

25

In herb plants the xylem and phloem are arranged in

a. scattered bundles
b. squares
c. rings

26

In dicot stems, the xylem and phloem are arranged in

a. scattered bundles
b. squares
c. rings

27

The dividing layer of cells separating the xylem and phloem in woody plants is the

a. sap
b. stem
c. cambium

28

WORKSHEET ANSWERS

III.7.1 Plant Transport

1. c) roots
2. b) stem
3. a) roots
4. c) stem
5. b) vascular system
6. c) leaves
7. b) stems
8. a) xylem and phloem
9. a) xylem
10. c) roots through leaves
11. b) phloem
12. b) stems and roots
13. c) woody plant
14. a) herb plant
15. b) rings
16. a) scattered bundles
17. b) starch
18. c) herb plants
19. b) starch to sugar
20. a) woody plants
21. c) both a and b
22. b) leaves
23. a) dicots
24. c) sap
25. b) woody plant
26. b) scattered bundles
27. c) rings
28. c) cambium

TGT GAMESHEET: III.7.1 Plant Transport

A plant whose stem has a lot of supportive and vascular tissue.

a. herb plant
b. xylem plant
c. woody plant

1

Conduct water and minerals up and down the plant.

a. roots
b. stems
c. leaves

2

In plants, food is stored as

a. sugar
b. starch
c. protein

3

Connects the roots and the leaves.

a. flower
b. stem
c. wood

4

During the winter, food is stored in the

a. roots and leaves
b. stems and roots
c. leaves and stems

5

In monocot stems, the xylem and phloem are arranged in

a. scattered bundles
b. rings
c. squares

6

Anchor the plant in the ground.

a. leaves
b. stems
c. roots

7

The tissue that transports food and minerals up and down.

a. xylem
b. phloem
c. dividing tissue

8

Herb plants are

a. dicots
b. monocots
c. both a and b

9

The major food-making organs of a plant.

a. roots
b. stems
c. leaves

10

The vascular system extends from

a. roots through stems
b. stems through leaves
c. roots through leaves

11

Oaks, maples and shrubs are examples of

a. woody plants
b. xylem plants
c. herb plants

12

The network of tubelike vessels which transport food.

a. transport system
b. vascular system
c. water system

13

In dicot stems, the xylem and phloem are arranged in

a. scattered bundles
b. rings
c. squares

14

In the spring, the food stored by plants is changed from

a. sugar to starch
b. starch to sugar
c. sugar to protein

15

TGT GAMESHEET: III.7.1 Plant Transport

Supports the plant and produces leaves.

a. root
b. vascular tissue
c. stem

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Water and dissolved minerals form

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b. phloem
c. sap

18

The tissue that transports water and minerals upward in a plant.

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b. xylem plant
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20

Woody plants are

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b. monocots
c. both a and b

21

The two main parts of the vascular system are

a. xylem and phloem
b. fruit and leaves
c. dividing tissue and phloem

22

Grasses, vegetables, and some flowering plants are examples of

a. woody plants
b. xylem plants
c. herb plants

23

Water is constantly escaping from a plant through the

a. roots
b. leaves
c. stems

24

The dividing layer of cells separating the xylem and phloem in woody plants.

a. sap
b. cambium
c. stem

25

Absorb water and minerals from the soil.

a. roots
b. leaves
c. stems

26

In woody plants, the xylem and phloem are arranged in

a. squares
b. scattered bundles
c. rings

27

In herb plants, the xylem and phloem are arranged in

a. squares
b. scattered bundles
c. rings

28

GAMESHEET ANSWERS

III.7.1 Plant Transport

1. c) woody plant
2. b) stems
3. b) starch
4. b) stem
5. b) stems and roots
6. a) scattered bundles
7. c) roots
8. b) phloem
9. c) both a and b
10. c) leaves
11. c) roots through leaves
12. a) woody plants
13. b) vascular system
14. b) rings
15. b) starch to sugar
16. c) stem
17. a) herb plant
18. c) sap
19. a) xylem
20. c) woody plant
21. a) dicots
22. a) xylem and phloem
23. c) herb plants
24. b) leaves
25. b) cambium
26. a) roots
27. c) rings
28. b) scattered bundles

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Transport in Living Things: The Heart

Objective: III.7.2--a. Students will identify the parts of the heart and their function in the circulatory system.

b. Students will trace the circulation of blood by listing the parts of the heart in sequence.

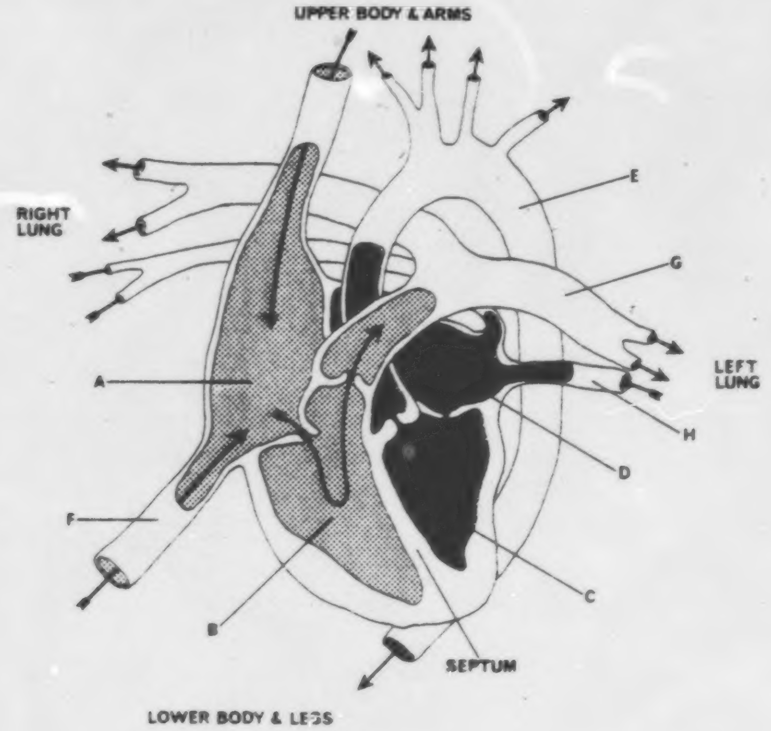
Instructions: This worksheet will help you prepare for the Human Circulatory System (The Heart) Game. Read the paragraph about the circulation of blood through the heart and body. Also study the diagram of the heart. For items 1-8, write the name of the lettered part of the heart diagram. For items 9-21, name the described part. For items 22-28, complete the cycle by listing the heart parts in sequence.

TGT WORKSHEET: III.7.2 The Heart

Blood returning to the heart from all parts of the body enters the right auricle (A). The right auricle contracts and pushes the blood through a valve into the right ventricle (B). The valve prevents the blood from flowing backwards. This blood is a dull red color; it comes from the body tissues. This blood contains very little oxygen and much carbon dioxide. Now the blood must be sent to the lungs. The right ventricle pushes the blood out of the heart and into special arteries called pulmonary arteries (G). These arteries carry the blood to the lungs.

In the lungs, the blood picks up oxygen and gets rid of carbon dioxide. The blood is now bright red because of the oxygen. This oxygen-rich blood is brought back to the heart by special veins called pulmonary veins (H). The blood from the lungs empties into the left auricle (D). The left auricle pushes the blood through a valve into the left ventricle (C). The left ventricle contracts and pumps the blood into the aorta (E).

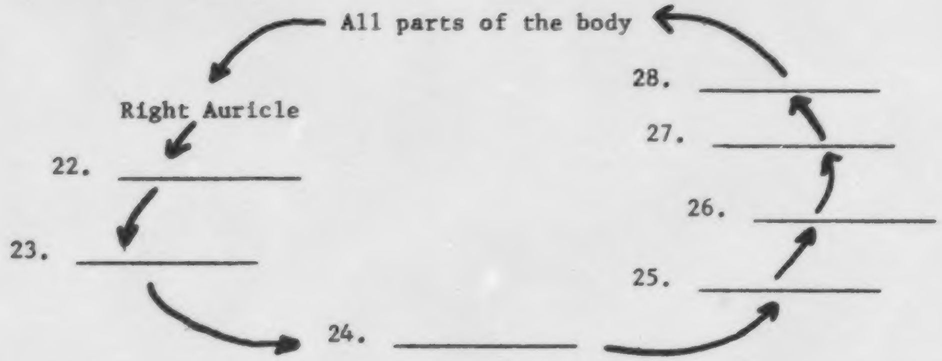
The aorta is the largest artery in the body. It branches to all parts of the body. The first branch carries blood to the heart itself. Another branch carries blood to the head, neck and arms. Still another branch carries blood to the lower parts of the body. After the blood exchanges materials in the capillaries, it flows back to the heart through veins. Blood returning to the heart from the lower body returns through the vena cava (F), the "vein from the body."



TGT WORKSHEET: III.7.2 The Heart

Part A is: ________ 1	Part G is: ________ 2	Part E is: ________ 3
Part D is: ________ 4	Part B is: ________ 5	Part H is: ________ 6
Part F is: ________ 7	Part C is: ________ 8	Receive blood from the right ventricle. ____________ 9
The largest artery in the body. ____________ 10	Receives blood from the veins of the body parts. ____________ 11	Carry blood to the lungs. ____________ 12
Carries blood to the body parts. ____________ 13	Receive blood from the lungs. ____________ 14	Receives blood from the pulmonary vein. ____________ 15
Separates the right side of the heart from the left side. ____________ 16	Prevents the blood from flowing backwards. ____________ 17	The exchange of carbon dioxide for oxygen takes place in the ____________ 18
Carry blood back to the heart. ____________ 19	The exchange of materials (oxygen and food for carbon dioxide and waste) takes place in the ____________ 20	The two upper chambers that receive blood from veins are called ____________ 21

Items 22-28: Trace the circulation of blood by listing the parts in sequence.



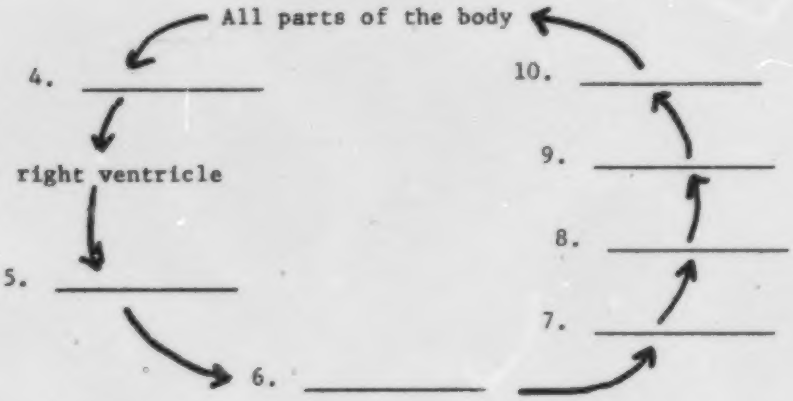
WORKSHEET ANSWERS

III.7.2 The Heart

1. right auricle
2. pulmonary arteries
3. aorta
4. left auricle
5. right ventricle
6. pulmonary veins
7. vein from the body (vena cava)
8. left ventricle
9. pulmonary arteries
10. aorta
11. right auricle
12. pulmonary arteries
13. aorta
14. pulmonary veins
15. left auricle
16. septum
17. valve
18. lungs
19. veins
20. capillaries
21. auricles
22. right ventricle
23. pulmonary arteries
24. lungs
25. pulmonary veins
26. left auricle
27. left ventricle
28. aorta

TGT GAMESHEET: III.7.2 The Heart

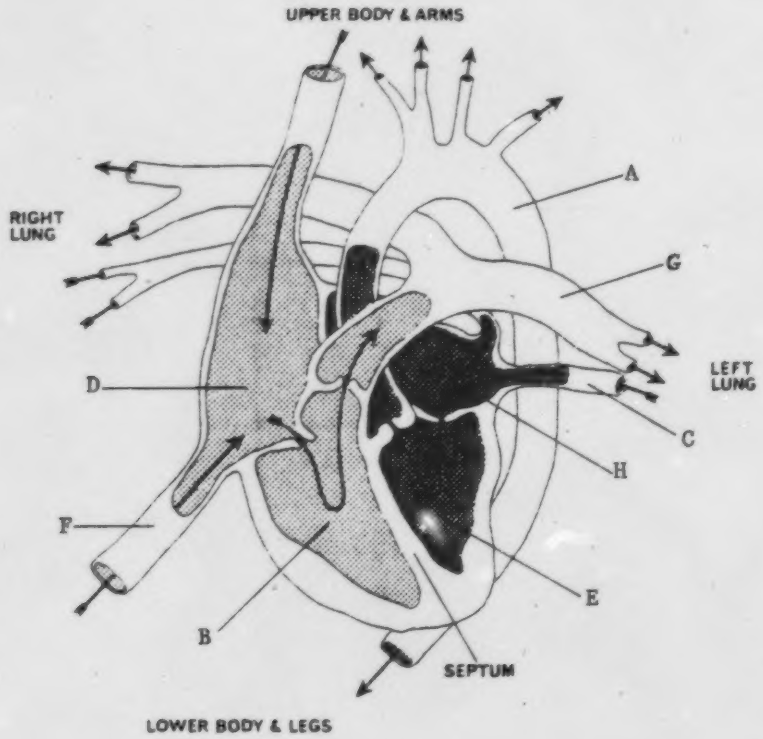
Part H is: ________ 1	The exchange of materials (oxygen and food for carbon dioxide and waste) takes place in the ___________. 2	Separates the right side of the heart from the left side of the heart. ___________ 3



The exchange of carbon dioxide for oxygen takes place in the ___________ 11	Part G is: ________ 12	Prevents the blood from flowing backwards. ___________ 13
Part D is: ________ 14	Part B is: ________ 15	Carry blood back to the heart. ___________ 16
Carries blood to the body parts. ___________ 17	Part C is: ________ 18	Receive blood from the right ventricle. ___________ 19
The largest artery in the body. ___________ 20	Receives blood from the veins of the body parts. ___________ 21	Carry blood to the lungs. ___________ 22
Part E is: ________ 23	Receive blood from the lungs. ___________ 24	Receives blood from the pulmonary vein. ___________ 25

TGT GAMESHEET: III.7.2 The Heart

The chambers of the heart that contain blood low in oxygen. __________ and __________ 26	Part A is: ______________ 27	Part F is: ______________ 28


UPPER BODY & ARMS
RIGHT LUNG
A
G
LEFT LUNG
D
C
H
F
E
B
SEPTUM
LOWER BODY & LEGS

GAMESHEET ANSWERS

III.7.2 The Heart

1. left auricle
2. capillaries
3. septum
4. right auricle
5. pulmonary arteries
6. lungs
7. pulmonary veins
8. left auricle
9. left ventricle
10. aorta
11. lungs
12. pulmonary arteries
13. valve
14. right auricle
15. right ventricle
16. veins
17. aorta (artery)
18. pulmonary veins
19. pulmonary arteries
20. aorta
21. right auricle
22. pulmonary arteries
23. left ventricle
24. pulmonary veins
25. left auricle
26. right auricle, right ventricle
27. aorta
28. vein from the body (vena cava)

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Transport in Living Things: The Blood

Objective: III.7.3--a. Students will identify the parts of the blood and the function of each part.

b. Students will identify various blood disorders from their descriptions.

Instructions: This worksheet will help you prepare for the Blood Transport Game. Study the chart carefully. Choose from vocabulary words a to d to complete items 1-18, and from e to p to complete items 19-30.

Vocabulary:

a. plasma
b. red blood cells
c. white blood cells
d. platelets
e. hemophilia
f. whole blood
g. immunity
h. antibodies
i. transfusion
j. leukemia
k. anemia
l. blood types
m. sickle cell anemia
n. hemoglobin
o. liver
p. spleen

BLOOD COMPONENTS AND THEIR FUNCTIONS

Component	Amount in Whole Blood	Functions
Cells	About 45 percent of whole blood	
Red blood cells (corpuscles)	4½ to 5 million per cubic millimeter	Disc-shaped cells with no nucleus; carry oxygen combined with hemoglobin
White blood cells (corpuscles)	5,000 to 10,000 per cubic millimeter	Many types with round shape; all have nuclei; fight off bacteria and produce antibodies
Platelets	About 250,000 per cubic millimeter	Small cells or cell fragments; essential in clotting
Plasma	About 55 percent of whole blood	
Water	About 92 percent of plasma	Transports nutrients, salts, waste substances, gases and heat
Proteins	About 7 percent of plasma	Some involved with clotting activities; others are antibodies
Inorganic salts and organic substances	About 1 percent of plasma	Contain essential minerals, organic nutrients, waste products, hormones, and enzymes which are transported to specific areas where they perform specific functions

TGT WORKSHEET: III.7.3 Blood

The blood cells that fight disease. 1	The clear, yellowish liquid part of the blood. 2	Transport oxygen and some CO_2. 3
Aid in blood clotting along with plasma. 4	Makes up about 55% of whole blood. 5	Owe their color to hemoglobin. 6
Their numbers increase rapidly during a serious infection. 7	They live for about 20 to 120 days. 8	Make up about 44% of whole blood. 9
Transports nutrients, salts, waste substances, gases, etc. 10	Can squeeze through the walls of the smallest blood vessel to fight infections. 11	Very tiny colorless blood cells. 12
The irregularly shaped blood cells containing dark material. 13	The blood cells which can be produced in bone marrow and lymph glands. 14	The flat disc-shaped blood cells. 15
Composed of about 92% water. 16	There are about 5 million of these cells in one drop of blood. 17	These decomposed cells can form pus in an infected area. 18
The solid and liquid parts of the blood. 19	The proteins in the plasma which fight foreign substances. 20	The iron-containing red pigment in red blood cells. 21
The body's resistance to a disease because antibodies are present. 22	The transfer of a healthy person's blood to a sick or injured person. 23	A small organ which stores blood and destroys dead red blood cells. 24
A large organ; destroying old red blood cells is one of its many functions. 25	The letters A, B, O. 26	A condition caused by too many white blood cells. 27
A condition caused by a lack of red blood cells. 28	An inherited condition in which blood fails to clot. 29	An inherited condition in which some red blood cells become crescent-shaped and block small blood vessels. 30

WORKSHEET ANSWERS

III.7.3 Blood

1. c) white blood cells
2. a) plasma
3. b) red blood cells
4. d) platelets
5. a) plasma
6. b) red blood cells
7. c) white blood cells
8. b) red blood cells
9. b) red blood cells
10. a) plasma
11. c) white blood cells
12. d) platelets
13. c) white blood cells
14. c) white blood cells
15. b) red blood cells
16. a) plasma
17. b) red blood cells
18. c) white blood cells
19. f) whole blood
20. h) antibodies
21. n) hemoglobin
22. g) immunity
23. i) transfusion
24. p) spleen
25. o) liver
26. l) blood types
27. j) leukemia
28. k) anemia
29. e) hemophilia
30. m) sickle cell anemia

TGT GAMESHEET: III.7.3 Blood

Owe their color to hemoglobin. 1	They live for about 20 to 120 days. 2	The body's resistance to a disease because antibodies are present. 3
Makes up about 55% of whole blood. 4	Their numbers increase rapidly during a serious infection. 5	The iron-containing red pigment in red blood cells. 6
Aid in blood clotting along with plasma. 7	These decomposed cells can form pus in an infected area. 8	The proteins in the plasma which fight foreign substances. 9
Transport oxygen and some CO_2. 10	There are about 5 million of these cells in one drop of blood. 11	The solid and liquid parts of the blood together. 12
The clear, yellowish liquid part of the blood. 13	Composed of about 92% water. 14	An inherited condition in which some red blood cells become crescent-shaped and block small blood vessels. 15
The blood cells that fight disease. 16	The flat disc-shaped blood cells. 17	An inherited condition in which blood fails to clot. 18
Very tiny colorless blood cells. 19	The blood cells which can be produced in bone marrow and lymph glands. 20	A condition caused by a lack of red blood cells. 21
Can squeeze through the walls of the smallest blood vessel to fight infections. 22	The irregularly shaped blood cells containing dark material. 23	A condition caused by too many white blood cells. 24
Transports nutrients, salts, waste substances, gases, etc. 25	A small organ which stores blood and destroys dead red blood cells. 26	The letters A, B, O. 27
Make up about 44% of whole blood. 28	The transfer of a healthy person's blood to a sick or injured person. 29	A large organ; destroying old red blood cells is one of its many functions. 30

GAMESHEET ANSWERS

III.7.3 Blood

1. red blood cells
2. red blood cells
3. immunity
4. plasma
5. white blood cells
6. hemoglobin
7. platelets
8. white blood cells
9. antibodies
10. red blood cells
11. red blood cells
12. whole blood
13. plasma
14. plasma
15. sickle cell anemia
16. white blood cells
17. red blood cells
18. hemophilia
19. platelets
20. white blood cells
21. anemia
22. white blood cells
23. white blood cells
24. leukemia
25. plasma
26. spleen
27. blood types
28. red blood cells
29. transfusion
30. liver

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Breathing and Respiration: Exchanging Gases

Objective: III.8.1--Students will match organisms with their method of exchanging oxygen and carbon dioxide.

Instructions: This worksheet will help you prepare for the Exchanging Gases Game. Match the letter of the method of exchanging gases with the item on the worksheet.

a. Exchange gases directly with their water environment.

b. Exchange gases with the atmosphere by means of special tubes called trachea.

c. Exchange gases by means of gills.

d. Exchange gases through the skin.

e. Exchange gases through their lungs.

TGT WORKSHEET: III.8.1 Exchanging Gases

amoeba 1	human 2	earthworm 3
whale 4	paramecia 5	perch 6
tadpole 7	grasshopper 8	snake 9
hydra 10	beetle 11	lizard 12
goldfish 13	robin 14	spider 15
lion 16	sponge 17	turtle 18
planarian 19	alligator 20	deer 21
squirrel 22	frog 23	crayfish 24
pelican 25	lobster 26	turkey 27
dolphin 28	tick 29	crab 30

WORKSHEET ANSWERS

III.8.1 Exchanging Gases

1. a
2. e
3. d
4. e
5. a
6. c
7. c
8. b
9. e
10. a
11. b
12. e
13. c
14. e
15. b
16. e
17. a
18. e
19. a
20. e
21. e
22. e
23. d, e
24. c
25. e
26. c
27. e
28. e
29. b
30. c

TGT GAMESHEET: III.8.1 Exchanging Gases

paramecia 1	bat 2	tadpole 3
hydra 4	guppies 5	tiger 6
planarian 7	seal 8	ostrich 9
porpoise 10	camel 11	amoeba 12
cricket 13	butterfly 14	owl 15
sponge 16	crocodile 17	toad 18
crayfish 19	tick 20	earthworm 21
shark 22	salamander 23	rattlesnake 24
scorpion 25	tortoise 26	bat 27
snail 28	chicken 29	crab 30

GAMESHEET ANSWERS

III.8.1 Exchanging Gases

1. a
2. e
3. c
4. a
5. c
6. e
7. a
8. e
9. e
10. e
11. e
12. a
13. b
14. b
15. e
16. a
17. e
18. d, e
19. c
20. b
21. d
22. c
23. d, e
24. e
25. b
26. e
27. e
28. c
29. e
30. c

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Breathing and Respiration:
The Respiratory System

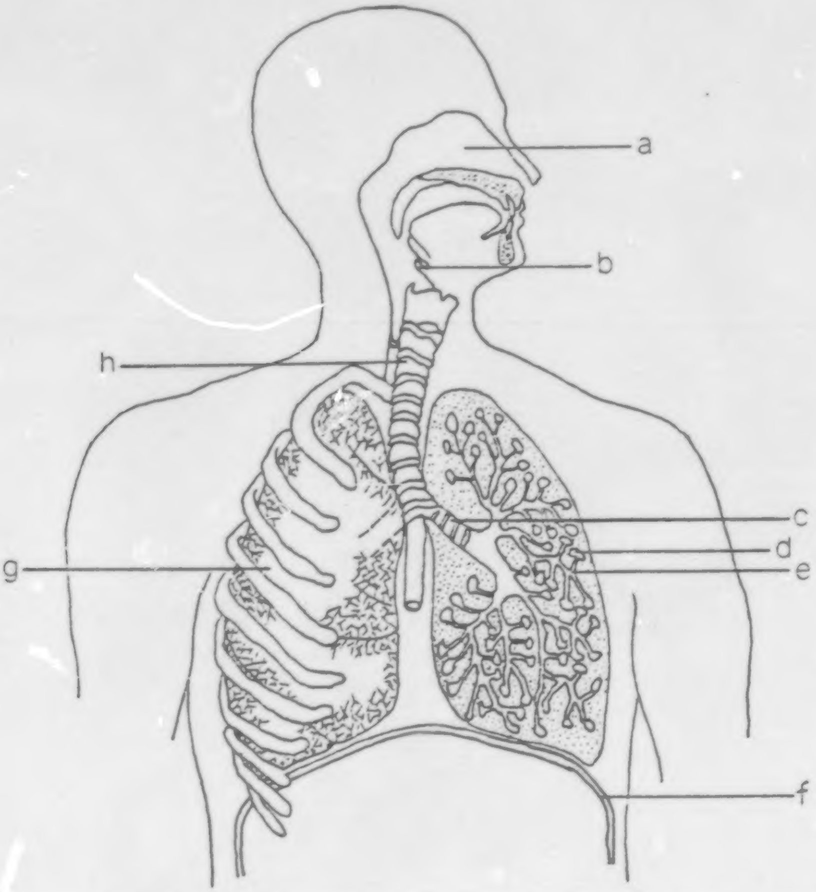
Objective: III.8.2-a. Students will identify the parts of the human respiratory system and the function of each part.
b. Students will distinguish between respiration and breathing.

Instructions: This worksheet will help you prepare for the Respiratory System Game. Study the diagrams carefully. For items 1-8, write the letter of the part which is named. For items 9-17, identify the part that is described. For items 18-27, choose the correct response.

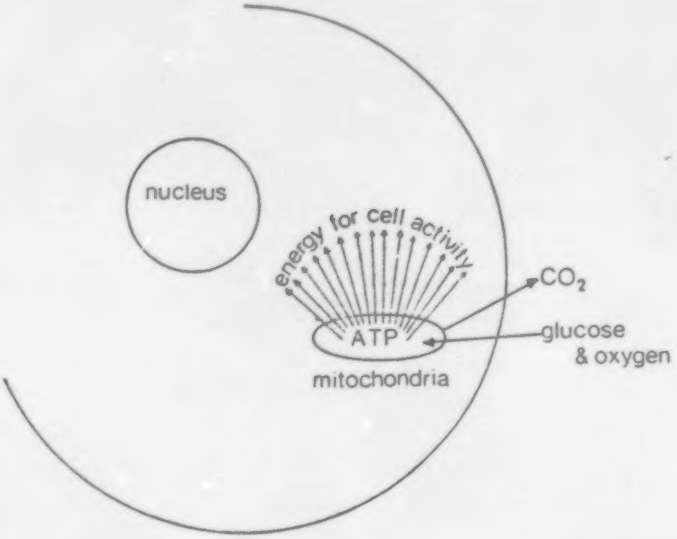
Vocabulary:

air sacs (alveoli)
ATP
breathing
bronchial tubes
bronchus
diaphragm
epiglottis
mitochondria
nasal passage (nose)
respiration
respiratory system
trachea

ORGANS IN THE HUMAN RESPIRATORY SYSTEM



RESPIRATION (Simplified Explanation)


nucleus
energy for cell activity
ATP
mitochondria
CO_2
glucose & oxygen

TGT WORKSHEET: III.8.2 The Respiratory System

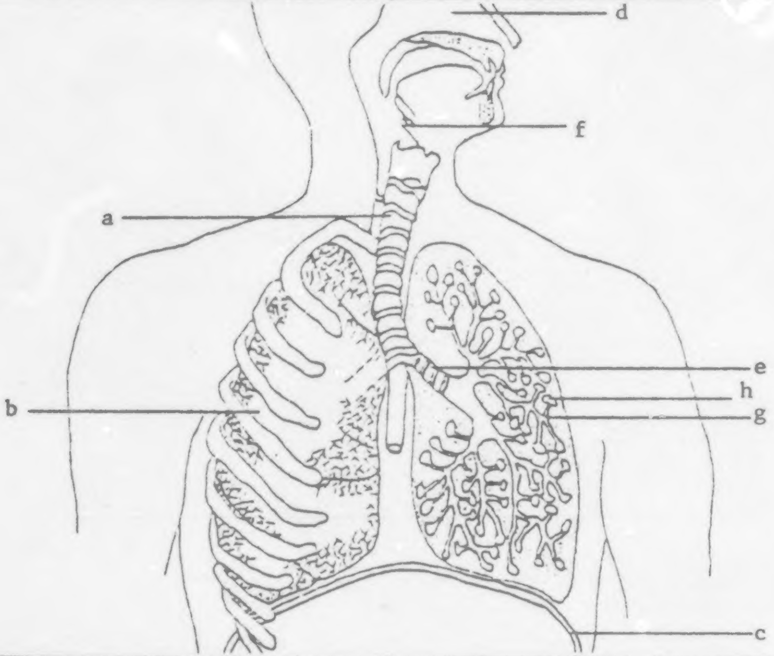
The trachea is: ________ 1	The nasal passage is: ________ 2	The air sac is: ________ 3
The bronchus is: ________ 4	The epiglottis is: ________ 5	The lung is: ________ 6
The diaphragm is: ________ 7	The bronchial tubes are: ________ 8	Keeps food from entering the trachea: ________ 9
It filters dust from the air, and warms and moistens the air. ________ 10	Carries air to the bronchi and also filters the air. ________ 11	Exchanges oxygen and carbon dioxide between the blood and lungs. ________ 12
The muscle that pumps air into and out of the lungs. ________ 13	The tubes which carry the air from the trachea to the air sacs. ________ 14	The major organ in which oxygen is exchanged for carbon dioxide. ________ 15
The two tubes leading from the trachea to the lungs. ________ 16	Its moist membranes keep dust and bacteria out of the lungs. ________ 17	The process that needs oxygen to release energy from glucose. breathing, respiration 18
Carbon dioxide and water are the product of this chemical change. breathing, respiration 19	This process takes place in the mitochondria of your cells. breathing, respiration 20	This process takes place through the organs of the respiratory system. breathing, respiration 21
This process is sometimes known as cellular respiration or internal respiration. breathing, respiration 22	This process is sometimes known as external respiration. breathing, respiration 23	You inhale O_2 and exhale CO_2. breathing, respiration 24
This process releases stored energy in nutrients as a result of oxidation in living things. breathing, respiration 25	The process in which cells gain oxygen and release carbon dioxide. breathing, respiration 26	The exchange of CO_2 and O_2 occurring between the blood and the air inside the lungs. breathing, respiration 27

WORKSHEET ANSWERS

III.8.2 The Respiratory System

1. h
2. a
3. d
4. c
5. b
6. g
7. f
8. e
9. b - epiglottis
10. a - nasal passage
11. h - trachea
12. d - air sac
13. f - diaphragm
14. c, e - bronchi, bronchial tubes
15. g - lung
16. c - bronchi
17. h - trachea
18. respiration
19. respiration
20. respiration
21. breathing
22. respiration
23. breathing
24. breathing
25. respiration
26. respiration
27. breathing

TGT GAMESHEET: III.8.2 The Respiratory System



Part e is:

________ 1

These tubes carry the air from the trachea to the air sacs.

________ 2

Part b is:

________ 3

The process in which cells gain oxygen and release carbon dioxide.

breathing, respiration 4

Part f is:

________ 5

This filters dust from the air, and warms and moistens the air.

________ 6

The exchange of CO_2 and O_2 occurring between the blood and the air inside the lungs.

breathing, respiration 7

Part g is:

________ 8

Part d is:

________ 9

This process is sometimes known as cellular respiration or internal respiration.

________ 10

This carries air to the bronchi and also filters the air.

________ 11

These exchange oxygen and carbon dioxide between the blood and lungs.

________ 12

Part c is:

________ 13

This muscle pumps air into and out of the lungs.

________ 14

This is the major organ in which oxygen is exchanged for carbon dioxide.

________ 15

Part h is:

________ 16

Part a is:

________ 17

The process that needs oxygen to release energy from glucose.

breathing, respiration 18

This process takes place in the mitochondria of your cells.

breathing, respiration 19

This keeps food from entering the trachea.

________ 20

This process is sometimes known as external respiration.

breathing, respiration 21

You inhale O_2 and exhale CO_2.

breathing, respiration 22

TGT GAMESHEET: III.8.2 The Respiratory System

Its moist membranes keep dust and bacteria out of the lungs. ______ 23	This process releases stored energy in nutrients as a result of oxidation in living things. breathing, respiration 24	Carbon dioxide and water are the products of this chemical change. breathing, respiration 25
The two tubes leading from the trachea to the lungs. ______ 26		

GAMESHEET ANSWERS

III.8.2 The Respiratory System

1. bronchus
2. bronchi, bronchial tubes
3. lung
4. respiration
5. epiglottis
6. nasal passage
7. breathing
8. bronchial tubes
9. nasal passage
10. respiration
11. trachea
12. air sacs
13. diaphragm
14. diaphragm
15. lung
16. air sacs
17. trachea
18. respiration
19. respiration
20. epiglottis
21. breathing
22. breathing
23. trachea
24. respiration
25. respiration
26. bronchi

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Waste Regulation and Excretion

Objective: III.9--a. Students will identify the structure and function of the organs associated with waste regulation and excretion.

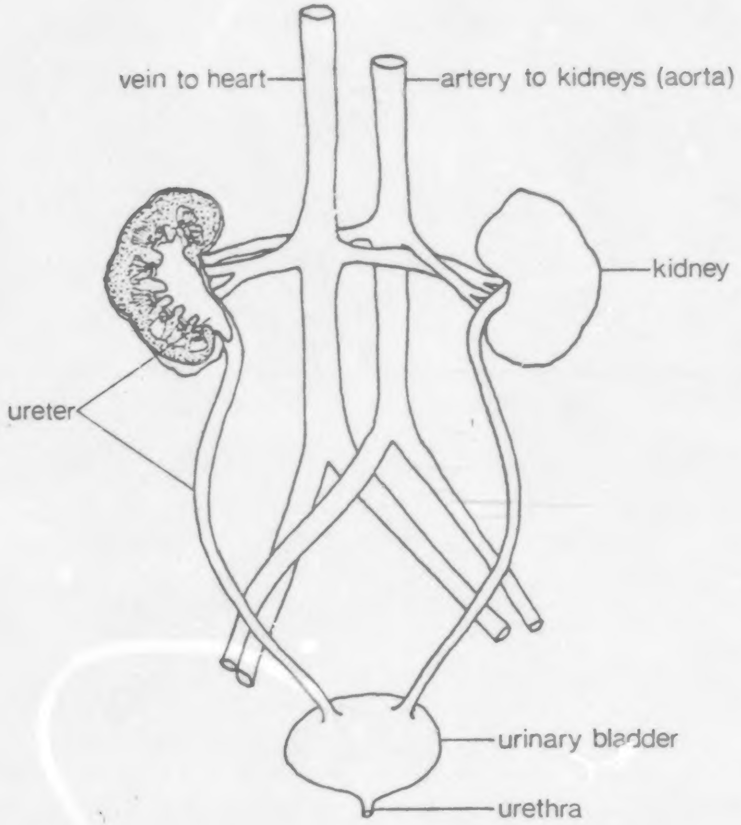
b. Students will identify metabolic wastes and how organisms get rid of them.

Instructions: This worksheet will help you prepare for the Waste Regulation and Excretion Game. Study the vocabulary terms carefully. For each item, identify the process, organ or waste material(s) involved.

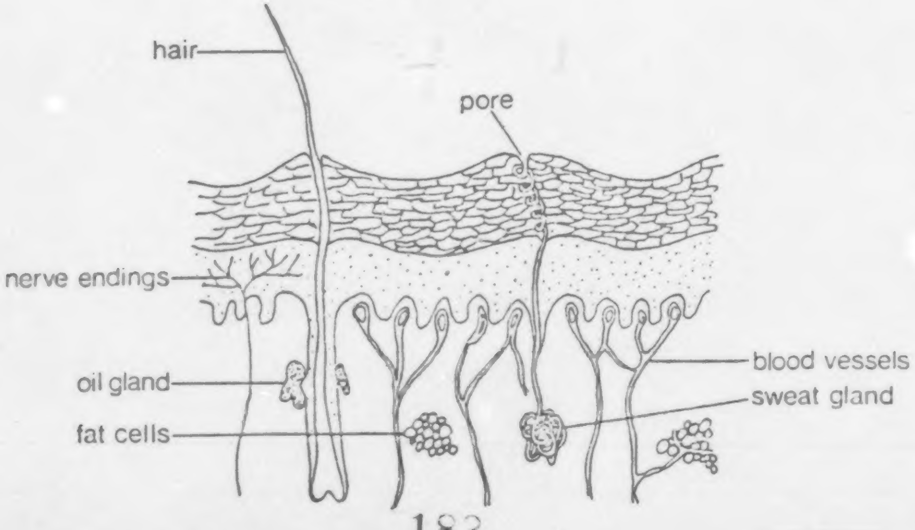
Vocabulary:

Processes: excretion, metabolism
Organs: bladder (urinary), kidney, liver, skin, urethra, ureter
Metabolic wastes: water, inorganic salts, carbon dioxide, nitrogen waste (ammonia, urea, uric acid), urine, undigested food, perspiration

THE EXCRETORY SYSTEM


vein to heart
artery to kidneys (aorta)
kidney
ureter
urinary bladder
urethra

THE SKIN


hair
pore
nerve endings
blood vessels
oil gland
sweat gland
fat cells

TGT WORKSHEET: III.9 Waste Regulation and Excretion

Changes ammonia to urea. 1	Carries urine from the kidneys to the bladder. 2	Changes glycogen to simple sugars. 3
Releases urea and less-poisonous substances into the blood. 4	Regulates body temperatures. 5	Regulates the level of water in the blood. 6
The muscular sac that stores urine. 7	Breaks down worn-out red blood cells to make bile. 8	Carries urine out of the body. 9
Changes poisonous substances to less poisonous ones. 10	Releases perspiration. 11	Changes excess amino acids to carbohydrates or fats. 12
Removes excess water, inorganic salts and urea from the blood. 13	Changes simple sugars to glycogen. 14	Regulates blood sugar levels. 15
Returns needed water, glucose and minerals to the blood. 16	The sum of all the chemical processes that take place in an organism. 17	The wastes which result from the activities of an organism. 18
The process by which an organism gets rid of metabolic waste. 19	The liquid excreted by the sweat glands of the skin. 20	The waste excreted through the lungs of humans. 21
The nitrogen-containing waste that results from the breakdown of amino acids. 22	The waste removed from the body that is not metabolic. 23	The nitrogen-containing waste that is formed in the liver from ammonia. 24
The liquid waste removed from the blood by the kidneys. 25	The nitrogen waste excreted by most reptiles, birds and insects. 26	Name at least three kinds of metabolic waste. 27

WORKSHEET ANSWERS

III.9 Waste Regulation and Excretion

1. liver
2. ureter
3. liver
4. liver
5. skin
6. kidney
7. bladder
8. liver
9. urethra
10. liver
11. skin
12. liver
13. kidney
14. liver
15. liver
16. kidney
17. metabolism
18. metabolic wastes
19. excretion
20. perspriation
21. carbon dioxide
22. ammonia
23. undigested waste
24. urea
25. urine
26. uric acid
27. water, inorganic salts, nitrogen materials (urea, uric acid, ammonia), or carbon dioxide

TGT GAMESHEET: III.9 Waste Regulation and Excretion

Regulates the level of water in the blood. 1	Carries urine from the kidneys to the bladder. 2	The process by which an organism gets rid of metabolic waste. 3
Releases urea and less poisonous substances into the blood. 4	The liquid waste removed from the blood by the kidneys. 5	Changes ammonia to urea. 6
The nitrogen-containing waste that is formed in the liver from ammonia. 7	Breaks down worn-out red blood cells to make bile. 8	Carries urine out of the body. 9
Changes poinsonous substances to less poisonous ones. 10	The sum of all the chemical processes that take place in an organism. 11	The waste removed from the body that is not metabolic. 12
Changes glycogen to simple sugars. 13	Name two kinds of nitrogen waste. 14	Regulates blood sugar levels. 15
Returns needed water, glucose and minerals to the blood. 16	Releases perspiration. 17	The wastes which result from the activities of an organism. 18
The muscular sac that stores urine. 19	The liquid excreted by the sweat glands of the skin. 20	The waste excreted through the lungs of humans. 21
The nitrogen-containing waste that results from the breakdown of amino acids. 22	Changes excess amino acids to carbohydrates or fats. 23	Removes excess water, inorganic salts and urea from the blood. 24
Regulates body temperatures. 25	The nitrogen waste excreted by most reptiles, birds and insects. 26	Changes simple sugars to glycogen. 27

GAMESHEET ANSWERS

III.9 Waste Regulation and Excretion

1. kidney
2. ureter
3. excretion
4. liver
5. urine
6. liver
7. urea
8. liver
9. urethra
10. liver
11. metabolism
12. undigested waste
13. liver
14. urea, uric acid, ammonia } any two
15. liver
16. kidney
17. skin
18. metabolic wastes
19. bladder
20. perspiration
21. carbon dioxide
22. ammonia
23. liver
24. kidney
25. skin
26. uric acid
27. liver

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Control Systems: Neurons and Reflexes

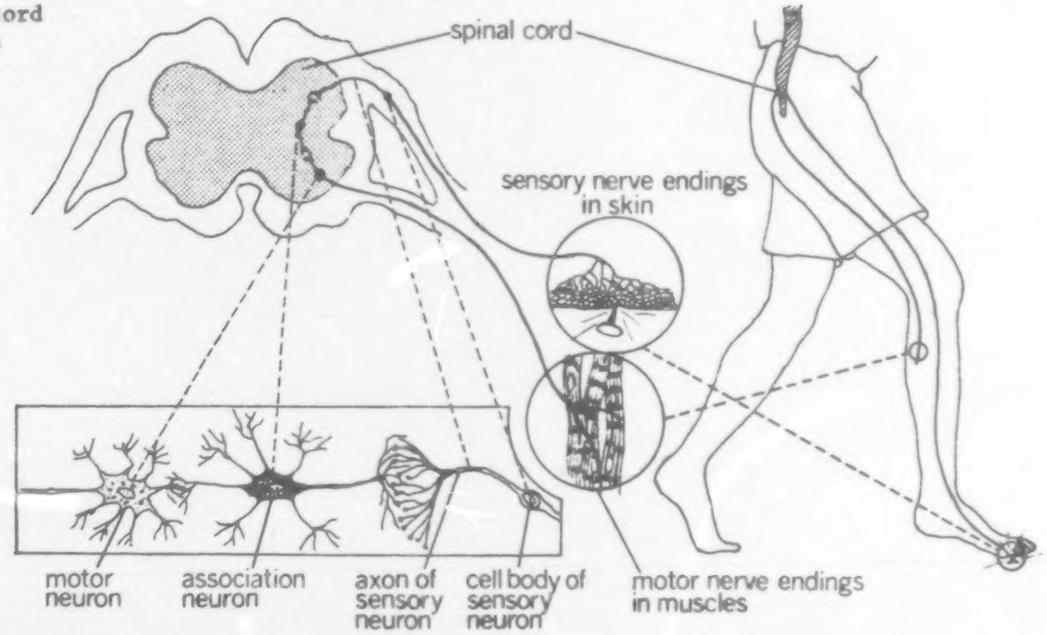
Objective: III.10.1--a. Students will identify the function and location of three types of neurons.
b. Students will distinguish between stimuli and responses.

Instructions: This worksheet will help you prepare for the Neurons and Reflexes Game. Study the diagram of a reflex action and the vocabulary carefully. For items 1-13, match the vocabulary word with its correct function or description. For items 14-30, circle whether each item is most probably a stimulus or a response.

Vocabulary:

association neuron
brain impulse
motor neuron
neuron
response
sensory neuron
spinal cord
stimulus

THE PATHWAY OF A REFLEX ACTION



spinal cord
sensory nerve endings in skin
motor neuron
association neuron
axon of sensory neuron
cell body of sensory neuron
motor nerve endings in muscles

TGT WORKSHEET: III.10.1 Neurons and Reflexes

A single nerve cell. 1	The neuron that carries impulses from a sense organ to the spinal cord or brain. 2	The change in the environment of an organism that causes the organism to react. 3
The automatic response to a stimulus not directly involving the brain. 4	The neuron that carries an impulse from a sensory neuron to a motor neuron. 5	The information that travels along a nerve fiber. 6
The reaction of an organism to a stimulus. 7	The neuron that carries an impulse from the brain or spinal cord to a muscle or gland. 8	The movement of muscles is caused by this part. 9
The neuron located in the brain or spinal cord. 10	The neuron that detects a stimulus. 11	The neuron that carries the impulse that causes a response. 12
In a reflex an impulse travels to and from the (a)__________ before the (b)__________ is involved. 13	Ball thrown at you. stimulus response 14	Sneezing. stimulus response 15
Loud noise. stimulus response 16	Ice cream. stimulus response 17	Jerking knee. stimulus response 18
Running. stimulus response 19	Shivering. stimulus response 20	Blinking eyes. stimulus response 21
Covering ears. stimulus response 22	Roots grow down. stimulus response 23	An unpleasant odor spray. stimulus response 24
Pupil of the eye becomes smaller. stimulus response 25	Balancing yourself. stimulus response 26	Hand pulls away. stimulus response 27
Tickling a foot. stimulus response 28	Face draws up or wrinkles. stimulus response 29	Dim light. stimulus response 30

WORKSHEET ANSWERS

III.10.1 Neurons and Reflexes

1. neuron
2. sensory neuron
3. stimulus
4. reflex
5. association neuron
6. impulse
7. response
8. motor neuron
9. motor neuron
10. association neuron
11. sensory neuron
12. motor neuron
13. a) spinal cord b) brain
14. stimulus
15. response
16. stimulus
17. stimulus
18. response
19. response
20. response
21. response
22. response
23. response
24. stimulus
25. response
26. response
27. response
28. stimulus
29. response
30. stimulus

TGT GAMESHEET: III.10.1 Neurons and Reflexes

Sudden chilly breeze. stimulus response 1	The movement of muscles is caused by this part. 2	In a reflex an impulse travels to and from the (a) ________ before the (b)__________ is involved. 3
Saliva flows. stimulus response 4	The neuron that carries the impulse that causes a response. 5	Stimuli are received by special _______________. 6
The neuron that carries an impulse from the brain or spinal cord to a muscle or gland. 7	You duck. stimulus response 8	Dust in your nose. stimulus response 9
The neuron that detects a stimulus. 10	Hitting the knee cap. stimulus response 11	Entire body jumps. stimulus response 12
Balancing yourself. stimulus response 13	Blinking eyes. stimulus response 14	The neuron that carries impulses from a sense organ to the spinal cord or brain. 15
The neuron that carries an impulse from a sensory neuron to a motor neuron. 16	An unpleasant odor. stimulus response 17	The information that travels along a nerve fiber. 18
Running. stimulus response 19	A single nerve cell. 20	The reaction of an organism to a stimulus. 21
Sunlight. stimulus response 22	The automatic response to a stimulus not directly involving the brain. 23	Touching a sharp object. stimulus response 24
The change in the environment of an organism that causes the organism to react. 25	Goose pimples. stimulus response 26	Sour lemon. stimulus response 27
Laughing. stimulus response 28	The neuron located in the brain or spinal cord. 29	Loud noise. stimulus response 30

GAMESHEET ANSWERS

III.10.1 Neurons and Reflexes

1. stimulus
2. motor neuron
3. a) spinal cord b) brain
4. response
5. motor neuron
6. sense organs
7. motor neuron
8. response
9. stimulus
10. sensory neuron
11. stimulus
12. response
13. response
14. response
15. sensory neuron
16. association neuron
17. stimulus
18. impulse
19. response
20. neuron
21. response
22. stimulus
23. reflex
24. stimulus
25. stimulus
26. response
27. stimulus
28. response
29. association neuron
30. stimulus

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Control Systems: The Nervous System

Objective: III.10.2--a. Students will identify the parts and functions of the brain and spinal cord.

b. Students will distinguish between the parts and the functions of the central and peripheral nervous systems.

c. Students will identify diseases or disorders of the nervous system.

Instructions: This worksheet will help you prepare for the Nervous Systems Game. Study the diagram and chart carefully. For items 1-4, name the parts of the central nervous system. For items 5-30, choose the correct answer for each item on the worksheet.

Vocabulary:

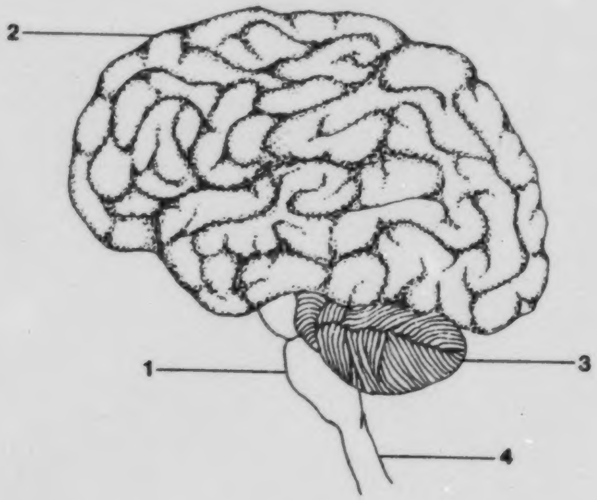
- brain
- cerebellum
- cerebrum
- cerebral hemorrhage (stroke)
- cerebral palsy
- concussion
- encephalitis
- epilepsy
- hydrophobia (rabies)
- meningitis
- multiple schlerosis
- neuritis
- Parkinson's disease
- poliomyelitis (polio)
- shingles
- tumor

TGT WORKSHEET: III.10.2 The Nervous System

DISORDERS OF THE CENTRAL NERVOUS SYSTEM

Disorder	Cause	Effect
Cerebral palsy	Injury to motor areas of the brain or lack of oxygen to the brain at birth	Paralysis or difficulty with motor function and/or coordination
Concussion of brain	Bruised brain caused by a sudden blow to the head or a sudden jolt	Loss of consciousness
Encephalitis (sleeping sickness)	Virus infection of brain areas	Headache--pain--deep sleep--coma
Epilepsy	Possibly injury, inflammation, or poor blood supply to the brain; often unknown	Mild to violent convulsions or seizures
Meningitis, cerebrospinal	Infection of meninges (membranes) of brain and spinal cord	Fever--chills--stiff neck--skin rash
Multiple sclerosis	Destruction of the scattered islands of nerve cells	Weakness--numbness--lack of coordination
Neuritis	Inflammation of nerve fiber sheath	Tenderness--pain--limited movement
Parkinson's disease	Degeneration of nerves at base of brain	Tremor--rigidity of muscles--speech impairment
Poliomyelitis	Virus infection of the brain and spinal cord	Muscle weakness--partial or extensive paralysis
Rabies	Virus from rabid animal entering open wound, affecting central nervous system	Pain at site--insomnia--acute muscle spasm--depression--death
Stroke (cerebral hemorrhage)	Clot, hemorrhage of blood vessel in brain	Depends on area of brain involved
Shingles (Herpes zoster)	Virus infection of sensory nerves	Pain--blisters on area supplied by affected nerves
Tumor (brain and spinal cord)	Abnormal cell growth	Pressure on nerves--inhibits activity of normal cells--destruction of normal cells

TGT WORKSHEET: III.10.2 The Nervous System



Part 1 is ________.

1

Part 2 is ________.

2

Part 3 is ________.

3

Part 4 is ________.

4

The largest part of the brain.

a. cerebellum
b. medulla
c. spinal cord
d. cerebrum

5

The brain sends and receives impulses by way of the

a. cerebellum
b. medulla
c. spinal cord
d. cerebrum

6

The center of intelligence is the

a. cerebellum
b. medulla
c. spinal cord
d. cerebrum

7

Without this part you would not be able to walk a beam, run, or play sports.

a. cerebrum
b. spinal cord
c. medulla
d. cerebellum

8

Controls the automatic activities of the internal organs.

a. cerebrum
b. spinal cord
c. medulla
d. cerebellum

9

TGT WORKSHEET: III.10.2 The Nervous System

Receives sensory impulses from the sense organs.

a. cerebrum
b. spinal cord
c. medulla
d. cerebellum

10

Coordinates muscular activities and body balance.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

11

Damage to this part may result in temporary or permanent paralysis of all or part of the body.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

12

Controls muscle movement.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

13

Injury to this part can cause instant death.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

14

Serves as a junction of sensory and motor nerves.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

15

Damage to this part can cause loss of memory, motor control or sensory function.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

16

Controls breathing and heartbeat.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

17

The major connective center between the brain and peripheral nervous system.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

18

Directs voluntary acts.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

19

This part is protected by vertebrae.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

20

The control center of the entire nervous system.

a. central nervous system
b. peripheral nervous system
c. both systems

21

The network of body nerves that branches throughout the body.

a. central nervous system
b. pheripheral nervous system
c. both systems

22

Made up of the brain, spinal cord and some nerves.

a. central nervous system
b. peripheral nervous system
c. both systems

23

Controls both voluntary and involuntary responses.

a. central nervous system
b. peripheral nervous system
c. both systems

24

TGT WORKSHEET: III.10.2 The Nervous System

Infection of the membranes covering the brain.

a. concussion
b. meningitis
c. stroke
d. tumor

25

The brain is bruised, caused by a sudden blow to the head.

a. concussion
b. meningitis
c. stroke
d. tumor

26

Results of a blood vessel bursting in the brain.

a. concussion
b. meningitis
c. stroke
d. tumor

27

Injury to the motor areas of the brain at birth causing paralysis.

a. concussion
b. cerebral palsy
c. multiple sclerosis
d. poliomyelitis

28

Mild to violent convulsions or seizures.

a. rabies
b. encephalitis
c. shingles
d. epilepsy

29

Virus infection of the brain and spinal cord with partial or extensive paralysis.

a. Parkinson's disease
b. cerebral palsy
c. poliomyelitis
d. rabies

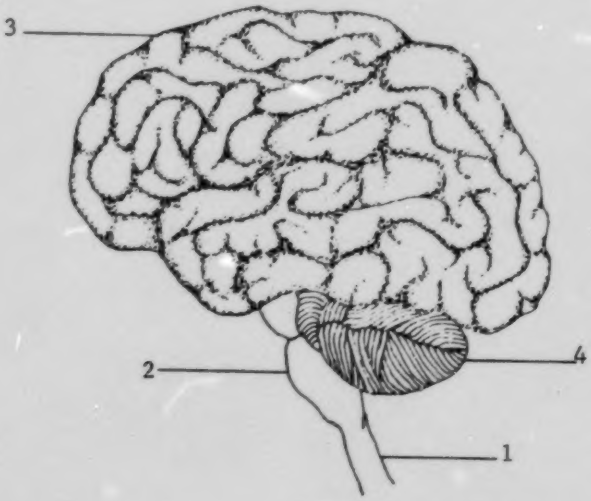
30

WORKSHEET ANSWERS

III.10.2 The Nervous System

1. medulla
2. cerebrum
3. cerebellum
4. spinal cord
5. d) cerebrum
6. c) spinal cord
7. d) cerebrum
8. d) cerebellum
9. c) medulla
10. a) cerebrum
11. b) cerebellum
12. a) spinal cord
13. c) cerebrum
14. d) medulla
15. d) spinal cord
16. b) cerebrum
17. a) medulla
18. d) spinal cord
19. c) cerebrum
20. a) spinal cord
21. a) central nervous system
22. b) peripheral nervous system
23. a) central nervous system
24. c) both systems
25. b) meningitis
26. a) concussion
27. c) stroke
28. b) cerebral palsy
29. d) epilepsy
30. c) poliomyelitis

TGT GAMESHEET: III.10.2 The Nervous System



Damage to this part can cause loss of memory, motor control or sensory function.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

1

Controls both voluntary and involuntary responses.

a. central nervous system
b. peripheral nervous system
c. both systems

2

A disorder resulting from a sudden blow to the head.

a. tumor
b. stroke
c. meningitis
d. concussion

3

Made up of the brain, spinal cord and some nerves.

a. central nervous system
b. peripheral nervous system
c. both systems

4

Part 3 is _________.

5

The major connective center between the brain and peripheral nervous system.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

6

Injury to the motor areas of the brain before birth.

a. concussion
b. cerebral palsy
c. multiple sclerosis
d. poliomyelitis

7

Controls breathing and heartbeat.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

8

Directs voluntary acts.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

9

TGT GAMESHEET: III.10.2 The Nervous System

The largest part of the brain.

a. cerebellum
b. medulla
c. spinal cord
d. cerebrum

10

Injury to this part can cause instant death.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

11

The center of intelligence is the

a. cerebellum
b. medulla
c. spinal cord
d. cerebrum

12

The network of body nerves that branches throughout the body.

a. central nervous system
b. peripheral nervous system
c. both systems

13

Mild to violent convulsions or seizures.

a. rabies
b. shingles
c. epilepsy
d. encephalitis

14

Part 1 is __________.

15

A virus infection of the brain and spinal cord with partial or extensive paralysis.

a. stroke
b. multiple sclerosis
c. cerebral palsy
d. poliomyelitis

16

Serves as a junction of sensory and motor nerves.

a. medulla
b. cerebrum
c. cerebellum
d. spinal cord

17

A cerebral hemorrhage.

a. stroke
b. poliomyelitis
c. cerebral palsy
d. multiple sclerosis

18

Part 4 is __________.

19

Controls muscle movement.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

20

Controls the automatic activities of the internal organs.

a. cerebrum
b. spinal cord
c. medulla
d. cerebellum

21

Coordinates muscular activities and body balance.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

22

Damage to this part may result in temporary or permanent paralysis of all or part of the body.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

23

The control center of the entire nervous system.

a. central nervous system
b. peripheral nervous system
c. both systems

24

TGT GAMESHEET: III.10.2 The Nervous System

Without this part you would not be able to walk a beam, run, or play sports.

a. cerebrum
b. medulla
c. medulla
d. cerebellum

25

This part is protected by vertebrae.

a. spinal cord
b. cerebellum
c. cerebrum
d. medulla

26

The brain sends and receives impulses by way of the

a. cerebellum
b. medulla
c. spinal cord
d. cerebrum

27

Infection of the membranes covering the brain.

a. concussion
b. meningitis
c. stroke
d. tumor

28

Receives sensory impulses from the sense organs.

a. cerebrum
b. spinal cord
c. medulla
d. cerebellum

29

Part 2 is __________.

30

GAMESHEET ANSWERS

III.10.2 The Nervous System

1. b) cerebrum
2. c) both systems
3. d) concussion
4. a) central nervous system
5. cerebrum
6. d) spinal cord
7. b) cerebral palsy
8. a) medulla
9. c) cerebrum
10. d) cerebrum
11. d) medulla
12. d) cerebrum
13. b) peripheral nervous system
14. c) epilepsy
15. spinal cord
16. d) poliomyelitis
17. d) spinal cord
18. a) stroke
19. cerebellum
20. c) cerebrum
21. c) medulla
22. b) cerebrum
23. a) spinal cord
24. a) central nervous system
25. d) cerebellum
26. a) spinal cord
27. c) spinal cord
28. b) meningitis
29. a) cerebrum
30. medulla

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Control Systems: Ductless Glands

Objective: III.10.3--a. Students will identify the location and function of ductless glands.

b. Students will identify the gland responsible for certain described conditions or situations.

Instructions: This worksheet will help you prepare for the Ductless Glands Game. Study the chart and diagram of the endocrine system carefully. Use the information from the chart and diagram to choose the correct answer on the worksheet. For items 22-30, choose the gland that is responsible for the condition described.

Vocabulary:

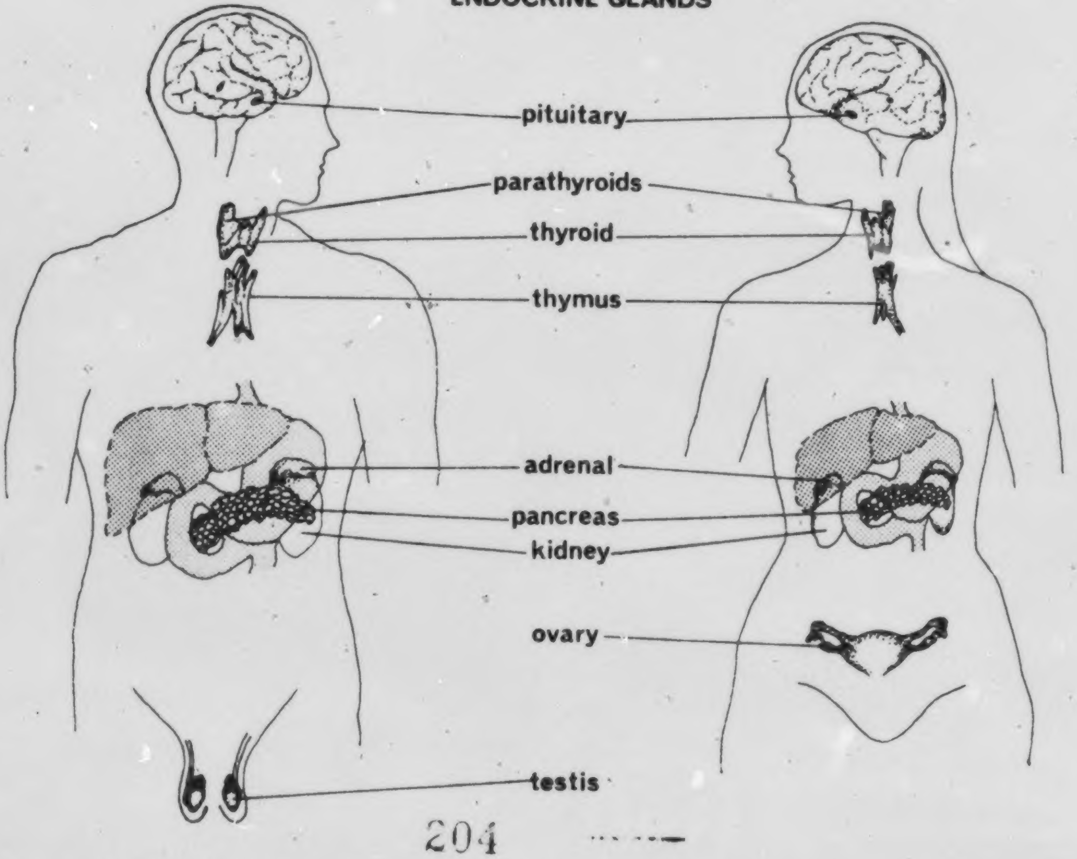
ductless glands (endocrine glands)
endocrine system
hormone
secretion

TGT WORKSHEET: III.10.3 Ductless Glands

Ductless Glands

Gland	Hormone	Function
Pituitary	growth hormones other pituitary hormones	Regulates the growth of the skeleton. Controls the release of hormones from other glands. Regulates the water balance in the body.
Adrenal	adrenalin cortisone	Prepares the body for emergencies and excitement by increasing heartbeat, blood flow; stimulates liver and nervous system. Regulates water and mineral balance in body tissues.
Thyroid	thyroxine	Regulates the release of energy in the body.
Parathyroid	parathyroid hormone	Controls the body use of calcium.
Pancreas	insulin	Allows the liver to store sugar and regulates body use of sugar.
Ovaries	female sex hormones	Controls female secondary sex characteristics.
Testes	male sex hormones	Controls male secondary sex characteristics.

ENDOCRINE GLANDS



TGT WORKSHEET: III.10.3 Ductless Glands

The gland located above the kidneys is the

a. pituitary
b. adrenal
c. thyroid
d. pancreas

1

The gland located in the neck below the voicebox is the

a. pituitary
b. adrenal
c. thyroid
d. pancreas

2

The gland located in the base of the brain is the

a. pituitary
b. adrenal
c. thyroid
d. parathyroid

3

The glands located on the back sides of the thyroid gland are the

a. pituitary
b. adrenal
c. pancreas
d. parathyroid

4

The gland located behind the stomach is the

a. pituitary
b. adrenal
c. pancreas
d. parathyroid

5

The glands located in the lower abdomen of females are the

a. ovaries
b. pituitary
c. testes
d. parathyroid

6

The glands located below the pelvis in males are the

a. ovaries
b. pituitary
c. testes
d. parathyroid

7

It produces the hormone called insulin.

a. adrenal
b. thyroid
c. parathyroid
d. pancreas

8

It produces the hormone called thyroxine.

a. adrenal
b. thyroid
c. parathyroid
d. pancreas

9

It produces the hormone called adrenalin.

a. adrenal
b. thyroid
c. parathyroid
d. pancreas

10

This gland produces hormones which stimulate the other ductless glands.

a. adrenal
b. thyroid
c. pituitary
d. testes

11

This gland controls the use of calcium in the tissues.

a. parathyroid
b. thyroid
c. adrenal
d. pancreas

12

It regulates the rate of metabolism.

a. parathyroid
b. thyroid
c. adrenal
d. pancreas

13

It regulates the growth of the skeleton.

a. pituitary
b. ovaries
c. testes
d. adrenal

14

This gland is sometimes called the "master" gland.

a. adrenal
b. pituitary
c. [illegible]yroid
d. pancreas

15

TGT WORKSHEET: III.10.3 Ductless Glands

This gland regulates the body use of sugar.

a. parathyroid
b. pancreas
c. thyroid
d. adrenal

16

This gland prepares the body for emergencies.

a. parathyroid
b. pancreas
c. thyroid
d. adrenal

17

These glands produce the female secondary sex characteristics.

a. ovaries
b. testes
c. pancreas
d. thyroid

18

It regulates the salt-and-water balance in the body.

a. pancreas
b. thyroid
c. testes
d. adrenal

19

It enables the liver to store and utilize sugar.

a. thyroid
b. testes
c. adrenal
d. pancreas

20

These glands produce the male secondary sex characteristics.

a. ovaries
b. testes
c. thyroid
d. parathyroid

21

A person with little energy.

a. parathyroid
b. thyroid
c. pancreas
d. pituitary

22

A person 8 feet tall.

a. pituitary
b. ovaries
c. testes
d. thyroid

23

A person with diabetes.

a. pancreas
b. parathyroid
c. adrenal
d. thyroid

24

A person "keyed-up" for a basketball game.

a. thyroid
b. pancreas
c. parathyroid
d. adrenal

25

A thin, nervous person with a pulse rate of 130.

a. ovaries
b. pituitary
c. testes
d. thyroid

26

The deepening of a young man's voice and the broadening of his shoulders.

a. ovaries
b. pituitary
c. testes
d. thyroid

27

A simple goiter.

a. parathyroid
b. thyroid
c. testes
d. ovaries

28

A car swerves towards you.

a. pituitary
b. adrenal
c. pancreas
d. parathyroid

29

An adult 3 feet 11 inches tall.

a. ovaries
b. testes
c. pituitary
d. thyroid

30

WORKSHEET ANSWERS

III.10.3 Ductless Glands

1. b) adrenal
2. c) thyroid
3. a) pituitary
4. d) parathyroid
5. c) pancreas
6. a) ovaries
7. c) testes
8. d) pancreas
9. b) thyroid
10. a) adrenal
11. c) pituitary
12. a) parathyroid
13. b) thyroid
14. a) pituitary
15. b) pituitary
16. b) pancreas
17. d) adrenal
18. a) ovaries
19. d) adrenal
20. d) pancreas
21. b) testes
22. b) thyroid
23. a) pituitary
24. a) pancreas
25. d) adrenal
26. d) thyroid
27. c) testes
28. b) thyroid
29. b) adrenal
30. c) pituitary

TGT GAMESHEET: III.10.3 Ductless Glands

The gland located above the kidneys is the

a. pituitary
b. adrenal
c. thyroid
d. pancreas

1

The glands located on the back sides of the thyroid gland are the

a. pituitary
b. adrenal
c. pancreas
d. parathyroid

2

An adult 3 feet 11 inches tall.

a. ovaries
b. testes
c. pituitary
d. thyroid

3

It produces the hormone called adrenalin.

a. adrenal
b. thyroid
c. parathyroid
d. pancreas

4

It regulates the rate of metabolism.

a. parathyroid
b. thyroid
c. adrenal
d. pancreas

5

This gland regulates the body use of sugar.

a. parathyroid
b. pancreas
c. thyroid
d. adrenal

6

A car swerves towards you.

a. pituitary
b. adrenal
c. pancreas
d. parathyroid

7

The gland located behind the stomach is the

a. pituitary
b. adrenal
c. pancreas
d. parathyroid

8

It produces the hormone called insulin.

a. adrenal
b. thyroid
c. parathyroid
d. pancreas

9

The deepening of a young man's voice and the broadening of his shoulders.

a. ovaries
b. pituitary
c. testes
d. thyroid

10

A person "keyed-up" for a basketball game.

a. thyroid
b. pancreas
c. parathyroid
d. adrenal

11

This gland prepares the body for emergencies.

a. parathyroid
b. pancreas
c. thyroid
d. adrenal

12

A young woman's breasts begin to develop and her hips to broaden.

a. ovaries
b. testes
c. adrenal
d. thyroid

13

It enables the liver to store and utilize sugar.

a. thyroid
b. testes
c. adrenal
d. pancreas

14

A person 8 feet tall.

a. pituitary
b. ovaries
c. testes
d. thyroid

15

TGT GAMESHEET: III.10.3 Ductless Glands

This gland controls the use of calcium in the tissues.

a. parathyroid
b. thyroid
c. adrenal
d. pancreas

16

This gland is sometimes called the "master" gland.

a. adrenal
b. pituitary
c. thyroid
d. pancreas

17

These glands produce the female secondary sex characteristics.

a. ovaries
b. testes
c. pancreas
d. thyroid

18

It regulates the salt-and-water balance in the body.

a. pancreas
b. thyroid
c. testes
d. adrenal

19

A person with little energy.

a. parathyroid
b. thyroid
c. pancreas
d. pituitary

20

It regulates the growth of the skeleton.

a. pituitary
b. ovaries
c. testes
d. adrenal

21

A simple goiter.

a. parathyroid
b. thyroid
c. testes
d. ovaries

22

The gland located in the base of the brain is the

a. pituitary
b. adrenal
c. thyroid
d. parathyroid

23

The glands located in the lower abdomen of females are the

a. ovaries
b. pituitary
c. testes
d. parathyroid

24

It produces the hormone called thyroxine.

a. adrenal
b. thyroid
c. parathyroid
d. pancreas

25

A thin, nervous person with a pulse rate of 130.

a. ovaries
b. pituitary
c. testes
d. thyroid

26

The gland located in the neck below the voicebox is the

a. pituitary
b. adrenal
c. thryoid
d. pancreas

27

These glands produce the male secondary sex characteristics.

a. ovaries
b. testes
c. thyroid
d. parathyroid

28

A person with diabetes.

a. pancreas
b. parathyroid
c. adrenal
d. thyroid

29

This gland produces hormones which stimulate the other ductless glands.

a. adrenal
b. thyroid
c. pituitary
d. testes

30

GAMESHEET ANSWERS

III.10.3 Ductless Glands

1. b) adrenal
2. d) parathyroid
3. c) pituitary
4. a) adrenal
5. b) thyroid
6. b) pancreas
7. b) adrenal
8. c) pancreas
9. d) pancreas
10. c) testes
11. d) adrenal
12. d) adrenal
13. a) ovaries
14. d) pancreas
15. a) pituitary
16. a) parathyroid
17. b) pituitary
18. a) ovaries
19. d) adrenal
20. b) thyroid
21. a) pituitary
22. b) thyroid
23. a) pituitary
24. a) ovaries
25. b) thyroid
26. d) thyroid
27. c) thyroid
28. b) testes
29. a) pancreas
30. c) pituitary

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Control Systems: The Sense Organs

Objective: III.10.4--a. Students will identify the functions of the sense organs.

b. Students will identify the structure and function of the eye and ear.

Instructions: This worksheet will help you prepare for the Sense Organs Game. Study the diagrams of the organs of special sense carefully. Choose the correct letter for each item on the worksheet.

Vocabulary:

auditory nerve
cochlea
cones
cornea
ear
ear canal
eardrum
eustachian tube
external ear
inner ear
iris
lens
middle ear
olfactory nerve
optic nerve
pupil
retina
rods
semicircular canals
skin

TGT WORKSHEET: III.10.4 The Sense Organs

Diagram of the Eye

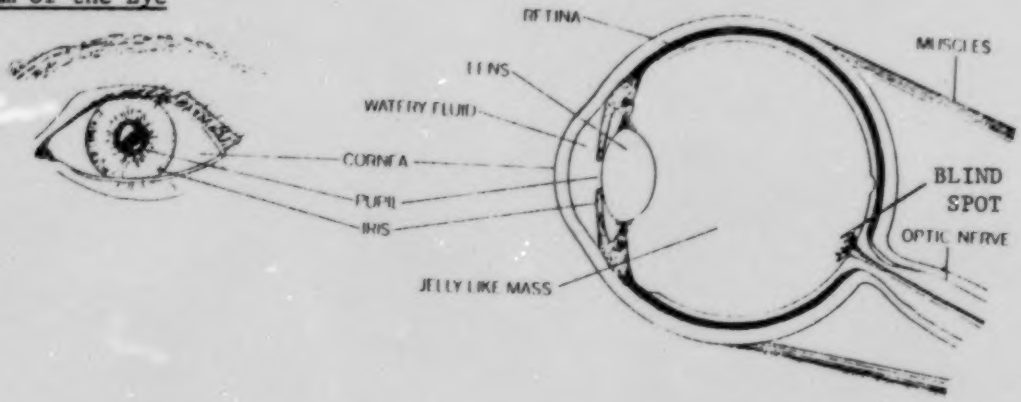

RETINA
LENS
WATERY FLUID
CORNEA
PUPIL
IRIS
JELLY LIKE MASS
MUSCLES
BLIND SPOT
OPTIC NERVE

Diagram of the Ear

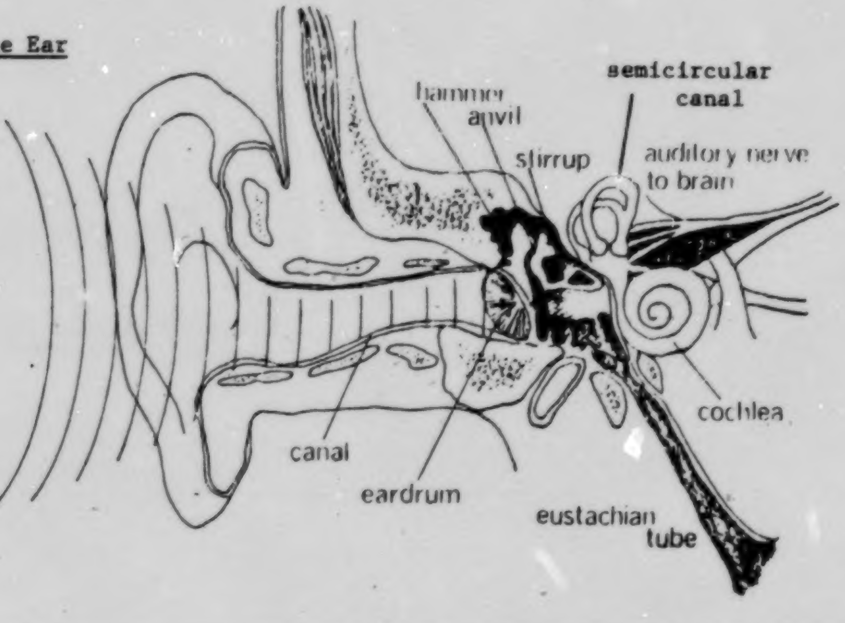
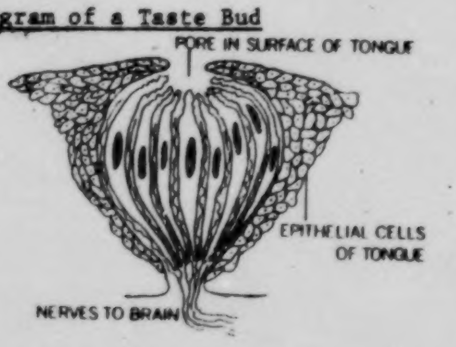
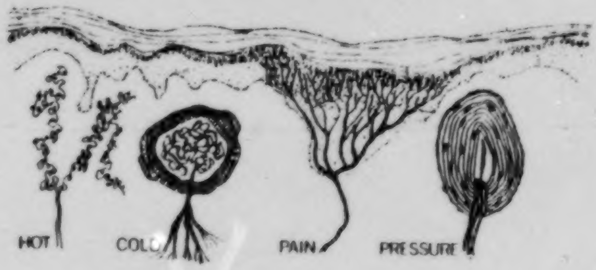

hammer
anvil
stirrup
semicircular canal
auditory nerve to brain
cochlea
canal
eardrum
eustachian tube

Diagram of a Taste Bud


PORE IN SURFACE OF TONGUE
EPITHELIAL CELLS OF TONGUE
NERVES TO BRAIN

Some Kinds of Nerve Endings in the Skin


HOT
COLD
PAIN
PRESSURE

TGT WORKSHEET: III.10.4 The Sense Organs

Which senses are used to detect stimuli that come from outside your body?

a. hunger, thirst
b. eyes, ears, taste buds, nose, skin
c. sight, sound, taste, smell, touch
d. medulla, cerebrum, cerebellum

1

The chemical senses are:

a. sight and sound
b. taste and sound
c. sight and smell
d. taste and smell

2

The sensory nerve endings of touch, pain, pressure and heat are found in the ______.

a. ear
b. skin
c. eye
d. nose

3

The tongue detects how many kinds of taste?

a. 5
b. 8
c. 10
d. 4

4

You have heard a sound when impulses from the ear reach the ________.

a. cochlea
b. cerebrum
c. spinal cord
d. semicircular canal

5

Transmits the sense of smell to the brain.

a. optic nerve
b. olfactory nerve
c. auditory nerve
d. pressure nerve

6

The nerve which carries messages from the retina to the brain.

a. optic nerve
b. olfactory nerve
c. auditory nerve
d. pressure nerve

7

Receives messages from the cochlea.

a. optic nerve
b. olfactory nerve
c. auditory nerve
d. pressure nerve

8

The hearing part of the inner ear.

a. semicircular canal
b. cochlea
c. eardrum
d. ear canal

9

The part of the inner ear that is partly responsible for balance.

a. eustachian tube
b. ear canal
c. semicircular canal
d. cochlea

10

The canal leading from the middle ear to the throat.

a. eustachian tube
b. ear canal
c. semicircular canal
d. cochlea

11

The part of the ear that contains fluid which is set in motion by the vibration of tiny bones.

a. eardrum
b. cochlea
c. ear canal
d. semicircular canal

12

The first part of the ear to vibrate is the _______.

a. cochlea
b. three tiny bones
c. semicircular canal
d. eardrum

13

The proper order of the vibrations of sound is

a. inner ear, middle ear, outer ear
b. middle ear, outer ear, inner ear
c. outer ear, middle ear, inner ear

14

The part of the ear that equalizes the air pressure inside the middle ear with the air pressure in the ear canal.

a. eustachian tube
b. semicircular canal
c. outer ear
d. inner ear

15

TGT WORKSHEET: III.10.4 The Sense Organs

The two major parts of the inner ear are the _______.

a. ear canal and ear drum
b. three tiny bones and eardrum
c. cochlea and semicircular canal
d. cochlea and eustachian tube

16

The part of the eye upon which light rays are focused.

a. pupil
b. cornea
c. retina
d. lens

17

The transparent covering over the pupil.

a. iris
b. cornea
c. pupil
d. retina

18

In dim light the size of the pupil _________.

a. increases
b. decreases
c. remains the same

19

The colored portion of the eye.

a. iris
b. cornea
c. pupil
d. retina

20

Where are images interpreted and seen?

a. on the retina
b. in the brain
c. on the lens
d. in the optic nerve

21

This part regulates the size of the pupil.

a. retina
b. cornea
c. iris
d. lens

22

The opening through which light enters the eye.

a. iris
b. cornea
c. pupil
d. lens

23

This part focuses light rays on the retina.

a. iris
b. cornea
c. pupil
d. lens

24

Transmits impulses to the brain to be interpreted.

a. optic nerve
b. rods
c. cones
d. retina

25

The nerve endings which function in bright light and color vision.

a. optic nerve
b. rods
c. cones
d. retina

26

Rods and cones are the light receptors located in the _________.

a. lens
b. retina
c. optic nerve
d. cornea

27

The nerve endings which register light and darkness but no colors.

a. optic nerve
b. rods
c. cones
d. retina

WORKSHEET ANSWERS

III.10.4 The Sense Organs

1. c) sight, sound, taste, smell, touch
2. d) taste and smell
3. b) skin
4. d) 4
5. b) semicircular canal
6. b) olfactory nerve
7. a) optic nerve
8. c) auditory nerve
9. b) cochlea
10. c) semicircular canal
11. a) eustachian tube
12. b) cochlea
13. d) eardrum
14. c) outer ear, middle ear, inner ear
15. a) eustachian tube
16. c) cochlea and semicircular canal
17. c) retina
18. b) cornea
19. a) increases
20. a) iris
21. b) in the brain
22. c) iris
23. c) iris
24. d) lens
25. a) optic nerve
26. c) cones
27. b) retina
28. b) rods

TGT GAMESHEET: III.10.4 The Sense Organs

Transmits the sense of smell to the brain.

a. optic nerve
b. olfactory nerve
c. auditory nerve
d. pressure nerve

1

The nerve endings which register light and darkness but no colors.

a. cones
b. retina
c. optic nerve
d. rods

2

The colored portion of the eye.

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b. cornea
c. pupil
d. retina

3

The tongue detects how many kinds of taste?

a. 5
b. 8
c. 10
d. 4

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The canal leading from the middle ear to the throat.

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b. ear canal
c. semicircular canal
d. cochlea

5

This part regulates the size of the pupil.

a. retina
b. cornea
c. iris
d. lens

6

The hearing part of the inner ear.

a. semicircular canal
b. cochlea
c. eardrum
d. ear canal

7

Receives messages from the cochlea.

a. optic nerve
b. olfactory nerve
c. auditory nerve
d. pressure nerve

8

Rods and cones are light receptors located in the _________.

a. cornea
b. lens
c. retina
d. optic nerve

9

In dim light the size of the pupil _________.

a. increases
b. decreases
c. remains the same

10

The proper order of the vibration of sound is _______.

a. inner ear, middle ear, outer ear
b. middle ear, outer ear, inner ear
c. outer ear, middle ear, inner ear

11

The part of the ear that contains fluid which is set in motion by the vibration of tiny bones.

a. eardrum
b. cochlea
c. ear canal
d. semicircular canal

12

The opening through which light enters the eye.

a. iris
b. cornea
c. pupil
d. lens

13

You have heard a sound when impulses from the ear reach the _________.

a. cochlea
b. cerebrum
c. spinal cord
d. semicircular canal

14

Where are images interpreted and seen?

a. on the retina
b. in the brain
c. on the lens
d. in the optic nerve

15

TGT GAMESHEET: III.10.4 The Sense Organs

This part focuses light rays on the retina.

a. iris
b. cornea
c. pupil
d. lens

16

The part of the eye upon which light rays are focused.

a. pupil
b. cornea
c. retina
d. lens

17

The transparent covering over the pupil.

a. iris
b. cornea
c. pupil
d. retina

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a. cones
b. retina
c. optic nerve
d. rods

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The chemical senses are:

a. sight and sound
b. taste and sound
c. sight and smell
d. taste and smell

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The part of the inner ear that is partly responsible for balance.

a. eustachian tube
b. ear canal
c. semicircular canal
d. cochlea

21

The two major parts of the inner ear are:

a. ear canal and eardrum
b. three tiny bones and eardrum
c. cochlea and semicircular canal
d. cochlea and eustachian tube

22

The nerve endings which function in bright light and color vision.

a. cones
b. retina
c. optic nerve
d. rods

23

Which senses are used to detect stimuli that come from outside your body?

a. hunger, thirst, headache pai
b. eyes, ears, taste buds, nose, skin
c. sight, sound, taste, smell, touch
d. medulla, cerebrum, cerebellu

24

The part of the ear that equalizes the air pressure inside the middle ear with the air pressure in the ear canal.

a. eustachian tube
b. semicircular canal
c. outer ear
d. inner ear

25

The nerve which carries messages from the retina to the brain.

a. optic nerve
b. olfactory nerve
c. auditory nerve
d. pressure nerve

26

The sensory nerve endings of touch, pain, pressure and heat are found in the _______.

a. ear
b. skin
c. eye
d. nose

27

GAMESHEET ANSWERS

III.10.4 The Sense Organs

1. b) olfactory nerve
2. d) rods
3. a) iris
4. d) 4
5. a) eustachian tube
6. c) iris
7. b) cochlea
8. c) auditory nerve
9. c) retina
10. a) increases
11. c) outer ear, middle ear, inner ear
12. b) cochlea
13. c) pupil
14. b) cerebrum
15. b) in the brain
16. d) lens
17. c) retina
18. b) cornea
19. c) optic nerve
20. d) taste and smell
21. c) semicircular canal
22. c) cochlea and semicircular canal
23. a) cones
24. c) sight, sound, taste, smell, touch
25. a) eustachian tube
26. a) optic nerve
27. b) skin

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Support and Movement: Human Skeleton

Objective: III.11.1--a. Students will identify bones that protect vital organs.

b. Students will identify and give examples of major types of joints.

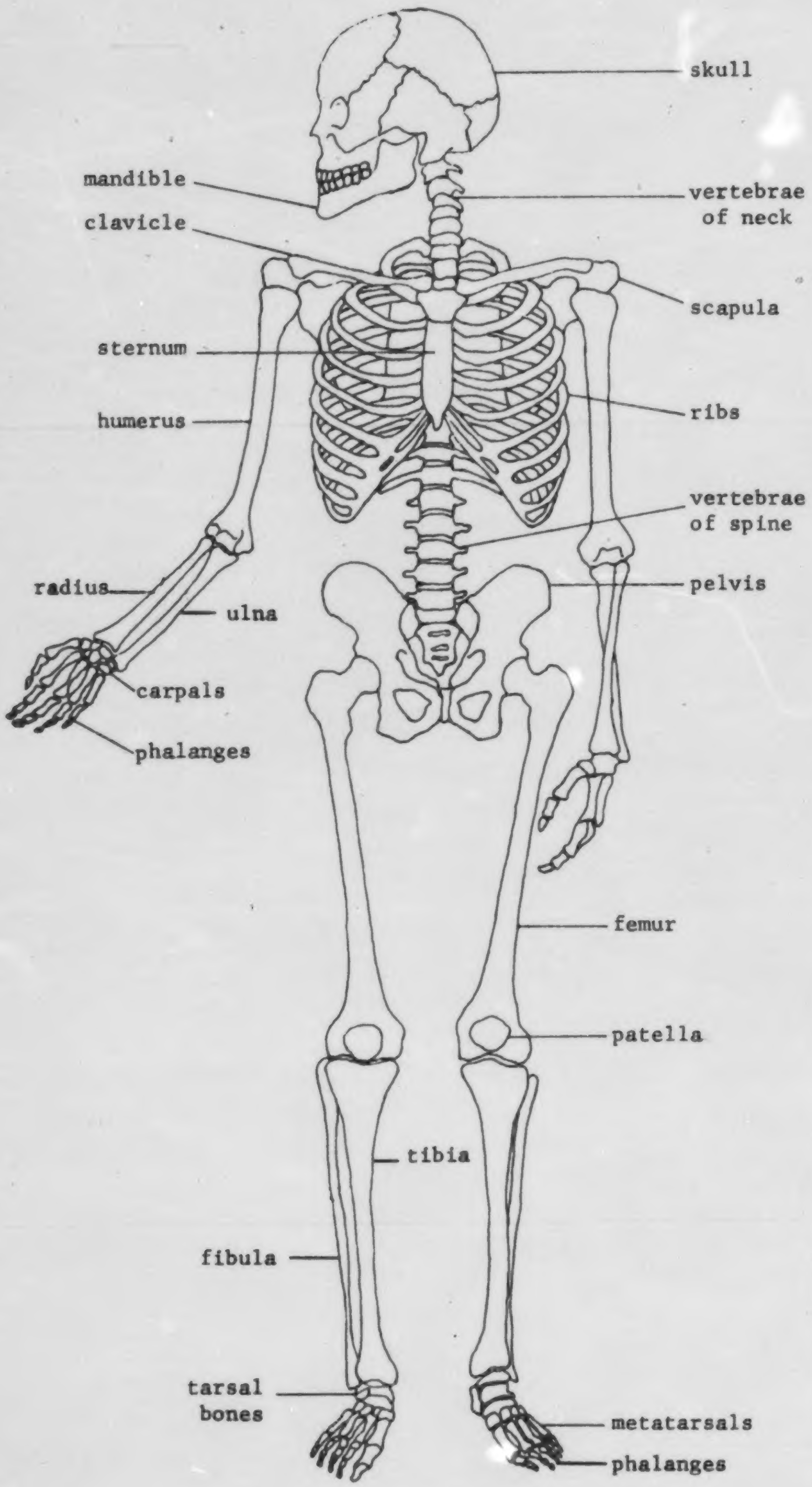
c. Students will identify the structure and composition of bones.

Instructions: This worksheet will help you prepare for the Human Skeleton Game. Study the diagram carefully. Choose the letter which best completes each item on the worksheet.

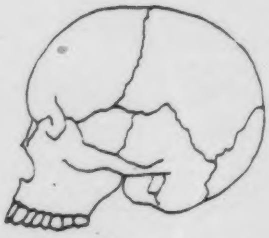
Vocabulary:

bone
calcium
cartilage
compound fracture
joint
ligament
marrow
phosphorus
simple fracture
skeleton
tendon
vertebrae (backbone)

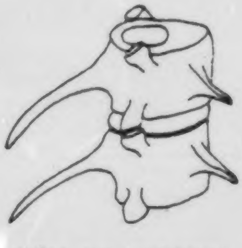
TGT WORKSHEET: III.11.1 Human Skeleton


skull
mandible
vertebrae of neck
clavicle
scapula
sternum
humerus
ribs
vertebrae of spine
radius
ulna
pelvis
carpals
phalanges
femur
patella
tibia
fibula
tarsal bones
metatarsals
phalanges

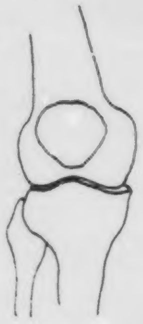
TYPES OF JOINTS



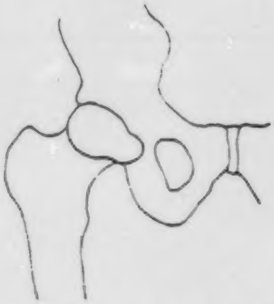
immovable joint (skull suture lines)



gliding joint (vertebrae)



hinge joint (knee)



ball and socket joint (hip)

TGT WORKSHEET: III.11.1 Human Skeleton

Which is not a function of the skeleton?

a. form
b. support
c. circulation
d. protection

1

The hard tissue made up of cells and deposits of calcium and phosphorus compounds is

a. cartilage
b. bone
c. tendon
d. ligament

2

The human body has _______ bones.

a. 120
b. 206
c. 260
d. 200

3

The human spinal cord is protected by the

a. skullbone
b. ribs
c. sternum
d. vertebrae

4

The firm but flexible tissue that gives shape and support to parts of the body is

a. cartilage
b. bone
c. tendon
d. ligament

5

The heart and lungs are protected by the

a. clavicle and sternum
b. sternum and vertebrae
c. sternum and ribs
d. ribs and clavicle

6

The place where two bones come together is called a

a. dermis
b. joint
c. cartilage
d. skull

7

The strong tough connective tissue that holds two bones together is a

a. joint
b. ligament
c. tendon
d. cartilage

8

The tough, non-elastic tissue that attaches skeletal muscles to bones is a

a. joint
b. ligament
c. tendon
d. cartilage

9

A joint that can move in only one direction is a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

10

The bone that protects the brain is the

a. mandible
b. vertebrae
c. skull
d. sternum

11

A movable joint that can be twisted is a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

12

What cushions and reduces the rubbing together of bones in a joint?

a. cartilage and special fluid
b. cartilage and tendons
c. cartilage and bone
d. tendons and special fluid

13

The joint which involves the sliding of bones is a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

14

Your toes, fingers and knees are examples of

a. hinge joints
b. ball and socket joints
c. immovable joints
d. gliding joints

15

TGT WORKSHEET: III.11.1 Human Skeleton

Your skull is an example of a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

16

Your hip is an example of a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

17

The kind of joint at the places where your arms and legs join the trunk of your body is called a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

18

Your vertebrae or backbone is an example of a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

19

The skull bones of a newborn baby are

a. solid and joined together
b. separate bones with soft spots
c. solid and not joined
d. exactly like an adult's

20

The soft material which fills the hollow part of certain bones is called

a. cartilage
b. marrow
c. blood
d. spongy bone

21

Red blood cells are produced in the

a. hard bone layer
b. spongy bone layer
c. red marrow
d. yellow marrow

22

The bone marrow located near the middle of a bone and composed of fat cells is

a. red
b. blue
c. purple
d. yellow

23

Red and white blood cells are produced in

a. all bones
b. long bones of the arms and legs
c. ribs attached to the breastbone
d. both b and c

24

The minerals necessary for the growth and hardening of bones are

a. iron and potassium
b. calcium and phosphorus
c. iodine and calcium
d. carbon and phosphorus

25

The upper arm contains a single bone called the

a. femur
b. scapula
c. humerus
d. radius

26

The finger and toe bones are called

a. carpals
b. tarsals
c. metatarsals
d. phalanges

27

The knee joint is protected by a flat, triangular bone called the

a. patella
b. femur
c. tarsals
d. tibia

28

The largest bone in the body is the

a. tibia
b. humerus
c. pelvis
d. femur

29

A partially broken or completely broken bone which does not pierce the skin is a

a. callus
b. compound fracture
c. simple fracture
d. greenstick fracture

30

WORKSHEET ANSWERS

III.11.1 Human Skeleton

1. c) circulation
2. b) bone
3. b) 206
4. d) vertebrae
5. a) cartilage
6. c) sternum and vertebrae
7. b) joint
8. b) ligament
9. c) tendon
10. a) hinge joint
11. c) skull
12. b) ball and socket joint
13. a) cartilage and special fluid
14. d) gliding joint
15. a) hinge joints
16. c) immovable joint
17. b) ball and socket joint
18. b) ball and socket joint
19. d) gliding joint
20. b) separate bones with soft spots
21. b) marrow
22. c) red marrow
23. d) yellow
24. d) both b and c
25. b) calcium and phosphorus
26. c) humerus
27. d) phalanges
28. a) patella
29. d) femur
30. c) simple fracture

TGT GAMESHEET: III.11.1 Human Skeleton

Your skull is an example of a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

1

The joint which involves the sliding of bones is a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

2

The hard tissue made up of cells and deposits of calcium and phosphorus compounds is

a. cartilage
b. bone
c. tendon
d. ligament

3

The upper arm contains a single bone called the

a. femur
b. scapula
c. humerus
d. radius

4

When the broken bone pierces the skin, the break is called a

a. callus
b. compound fracture
c. simple fracture
d. greenstick fracture

5

The firm but flexible tissue that gives shape and support to parts of the body is

a. cartilage
b. bone
c. tendon
d. ligament

6

The strong tough connective tissue that holds two bones together is a

a. joint
b. ligament
c. tendon
d. cartilage

7

The kind of joint at the places where your arms and legs join the trunk of your body is called a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

8

Your hip is an example of a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

9

Your toes, fingers and knees are examples of

a. hinge joints
b. ball and socket joints
c. immovable joints
d. gliding joints

10

Red and white blood cells are produced in

a. all bones
b. long bones of the arms and legs
c. ribs attached to the breastbone
d. both b and c

11

The finger and toe bones are called

a. carpals
b. tarsals
c. metatarsals
d. phalanges

12

The bone marrow located near the middle of a bone and composed of fat cells is

a. red
b. blue
c. purple
d. yellow

13

The heart and lungs are protected by the

a. clavicle and sternum
b. sternum and vertebrae
c. sternum and ribs
d. ribs and clavicle

14

The human body has _______ bones.

a. 120
b. 206
c. 260
d. 200

15

TGT GAMESHEET: III.11.1 Human Skeleton

Red blood cells are produced in the

a. hard bone layer
b. spongy bone layer
c. red marrow
d. yellow marrow

16

A joint that can move in only one direction is a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

17

The skull bones of a newborn baby are

a. solid and joined together
b. separate bones with soft spots
c. solid and not joined together
d. exactly like an adult's

18

Your vertebrae or backbone is an example of a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

19

Which is not a function of the skeleton?

a. form
b. support
c. circulation
d. protection

20

A movable joint that can be twisted is a(n)

a. hinge joint
b. ball and socket joint
c. immovable joint
d. gliding joint

21

The largest bone of the body is the

a. tibia
b. pelvis
c. humerus
d. femur

22

The soft material which fills the hollow part of certain bones is called

a. cartilage
b. marrow
c. blood
d. spongy bone

23

What cushions and reduces the rubbing together of bones in a joint?

a. cartilage and special fluid
b. cartilage and tendons
c. cartilage and bone
d. tendons and special fluid

24

A partially broken or completely broken bone which does not pierce the skin is called a

a. greenstick fracture
b. callus
c. compound fracture
d. simple fracture

25

The place where two bones come together is called a

a. dermis
b. joint
c. cartilage
d. skull

26

The tough, non-elastic tissue that attaches skeletal muscles to bones is a

a. joint
b. ligament
c. tendon
d. cartilage

27

The knee joint is protected by a flat triangular bone called the

a. patella
b. femur
c. tarsals
d. tibia

28

The bone that protects the brain is the

a. mandible
b. vertebrae
c. skull
d. sternum

29

The human spinal cord is protected by the

a. skullbone
b. ribs
c. sternum
d. vertebrae

30

GAMESHEET ANSWERS

III.11.1 Human Skeleton

1. c) immovable joint
2. d) gliding joint
3. b) bone
4. c) humerus
5. b) compound fracture
6. a) cartilage
7. b) ligament
8. b) ball and socket joint
9. b) ball and socket joint
10. a) hinge joints
11. d) both b and c
12. d) phalanges
13. d) yellow
14. c) sternum and ribs
15. b) 206
16. c) red marrow
17. a) hinge joint
18. b) separate bones with soft spots
19. d) gliding joint
20. c) circulation
21. b) ball and socket joint
22. d) femur
23. b) marrow
24. a) cartilage and special fluid
25. d) simple fracture
26. b) joint
27. c) tendon
28. a) patella
29. c) skull
30. d) vertebrae

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Support and Movement: Muscles

Objective: III.11.2--a. Students will identify and compare the structure and function of three types of muscles.

b. Students will compare voluntary and involuntary muscles.

c. Students will identify muscles that bend and extend joints in the arm

d. Students will identify diseases or disorders associated with muscles.

Instructions: This worksheet will help you prepare for the Muscle Movement Game. Study the chart and diagrams. For items 1-11, use the chart and/or diagrams to help you choose the correct answer; for items 12-19, determine if the muscles are voluntary, involuntary or both voluntary and involuntary; and for items 20-30, use the diagram of the arm to help you choose the correct letter on the worksheet.

Vocabulary:

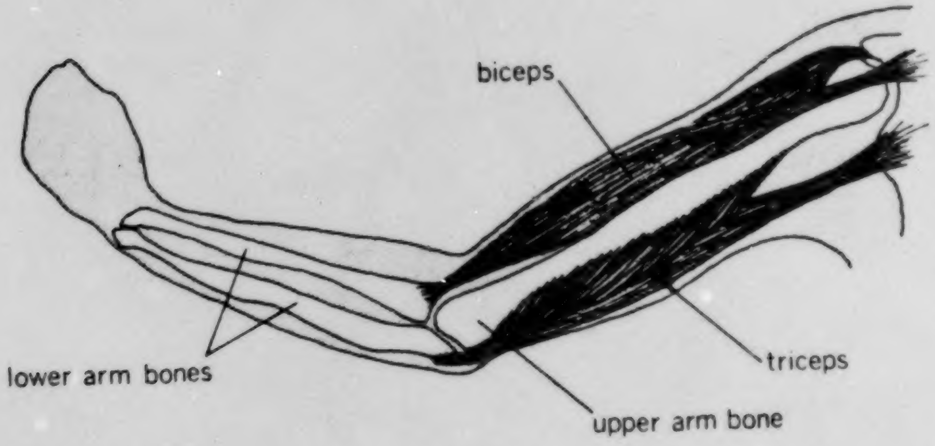
biceps
bursa
bursitis
cardiac muscle
extensors
flexors
hernia
involuntary muscle
lactic acid
muscular dystrophy
skeletal muscle
smooth muscle
triceps
voluntary muscle

TGT WORKSHEET: III.11.2 Muscles

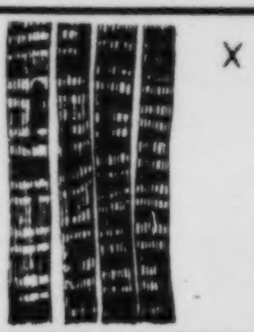
COMPARISON OF THREE MUSCLE TYPES

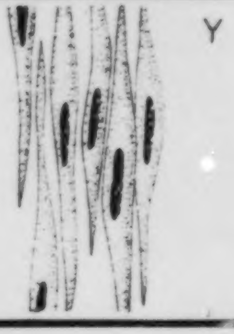
Smooth Muscles	Skeletal Muscles	Cardiac Muscles
1. long slender cells with a nucleus near the center of each cell	1. bundles of long fibers that are insulated from each other	1. bundles of fibers that are interconnected
2. located in internal organs	2. attached to skeleton, contraction results in movement of bones	2. located only in the heart
3. involuntary	3. voluntary (control at will)	3. involuntary
4. contract more slowly than other muscles	4. capable of quicker and more precise movements	

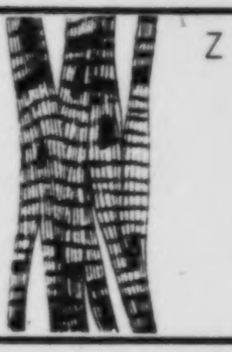
DIAGRAM OF THE UPPER ARM MUSCLES



TGT WORKSHEET: III.11.2 Muscles







The type of muscle cells located only in the heart.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

1

The two muscle types that are involuntary are:

a. smooth and cardiac
b. smooth and skeletal
c. cardiac and skeletal

2

The muscle type that moves more quickly than the other two.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

3

Voluntary muscles such as the arm and leg muscles are:

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

4

The type of involuntary muscles located in internal organs.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

5

The muscle type that moves food, blood and urine.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

6

The muscle type that pumps blood to all parts of the body.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

7

Each muscle cell has a nucleus near its center.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

8

Diagram X represents:

a. smooth muscle cells
b. skeletal muscle cells
c. cardiac muscle cells

9

Diagram Y represents:

a. smooth muscle cells
b. skeletal muscle cells
c. cardiac muscle cells

10

Diagram Z represents:

a. smooth muscle cells
b. skeletal muscle cells
c. cardiac muscle cells

11

Your stomach walls are:

a. involuntary muscles
b. voluntary muscles
c. both

12

TGT WORKSHEET: III.11.2 Muscles

Your hands are controlled by:

a. involuntary muscles
b. voluntary muscles
c. both

13

Your eyelids are controlled by:

a. involuntary muscles
b. voluntary muscles
c. both

14

Your artery walls are:

a. involuntary muscles
b. voluntary muscles
c. both

15

Your arms are controlled by:

a. involuntary muscles
b. voluntary muscles
c. both

16

Your heart is a(n):

a. involuntary muscle
b. voluntary muscle
c. both

17

Your diaphragm is a(n):

a. involuntary muscle
b. voluntary muscle
c. both

18

Your tongue is a(n):

a. involuntary muscle
b. voluntary muscle
c. both

19

The muscles that bend joints are called:

a. flexors
b. tendons
c. extensors

20

The muscles that straighten or extend a joint are called:

a. flexors
b. tendons
c. extensors

21

The tissue that connects skeletal muscles to bones:

a. flexors
b. tendons
c. extensors

22

The name of the extensor muscle in the arm:

a. bicep
b. tricep
c. tendon

23

The name of the flexor muscle in the arm:

a. bicep
b. tricep
c. tendon

24

Muscles work by:

a. pushing
b. contracting
c. sliding

25

Working muscles get:

a. short and firm
b. long and thin
c. long and firm

26

Try to lift your desk with one hand (palm up). Feel your bicep and tricep with the other hand. Which muscle is firmer and pulls your arm up toward your body?

a. tricep
b. bicep
c. both

27

TGT WORKSHEET: III.11.2 Muscles

Place your hand palm up on your desk. Press down on the desk. Feel your bicep and tricep with the other hand. Which muscle is firmer and extends your arm away from your body?

a. tricep
b. bicep
c. both

28

Which exercise will probably strengthen your biceps?

a. push-ups
b. chin-ups
c. running

29

Which exercise will probably strengthen your triceps?

a. push-ups
b. chin-ups
c. pull-ups

30

A tear in the muscle layer of the abdomen which allows the intestine to press through.

a. bruise
b. hernia
c. bursa

31

A condition common in children consisting of gradual and progressive destruction of muscle fibers.

a. bursitis
b. muscular dystrophy
c. Achille's tendon

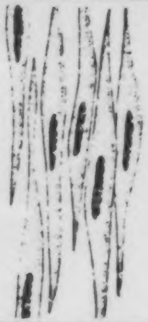
32

WORKSHEET ANSWERS

III.11.2 Muscles

1. c) cardiac muscle
2. a) smooth and cardiac
3. b) skeletal muscle
4. b) skeletal muscle
5. a) smooth muscle
6. a) smooth muscle
7. c) cardiac muscle
8. a) smooth muscle
9. b) skeletal muscle cells
10. a) smooth muscle cells
11. c) cardiac muscle cells
12. a) involuntary muscles
13. b) voluntary muscles
14. c) both
15. a) involuntary muscles
16. b) voluntary muscles
17. a) involuntary muscle
18. c) both
19. c) both
20. a) flexors
21. c) extensors
22. b) tendons
23. b) tricep
24. a) bicep
25. b) contracting
26. a) short and firm
27. b) bicep
28. a) tricep
29. b) chin-ups
30. a) push-ups
31. b) hernia
32. b) muscular dystrophy

TGT GAMESHEET: III.11.2 Muscles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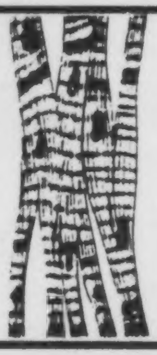
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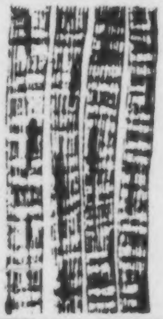

Z

The name of the flexor muscle in the arm:

a. bicep
b. tricep
c. tendon

1

Each muscle cell has a nucleus near its center.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

2

Your diaphragm is a(n):

a. involuntary muscle
b. voluntary muscle
c. both

3

Voluntary muscles such as the arm and leg muscles are:

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

4

The muscles that straighten or extend a joint are called:

a. flexors
b. tendons
c. extensors

5

Your artery walls are:

a. involuntary muscles
b. voluntary muscles
c. both

6

The muscle type that pumps blood to all parts of the body is:

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

7

The muscles that bend joints are called:

a. flexors
b. tendons
c. extensors

8

A tear in the muscle layer of the abdomen which allows the intestine to press through.

a. bruise
b. hernia
c. bursa

9

Diagram Y represents:

a. smooth muscle cells
b. skeletal muscle cells
c. cardiac muscle cells

10

The two muscle types that are involuntary are:

a. smooth and cardiac
b. smooth and skeletal
c. cardiac and skeletal

11

Try to lift your desk with one hand (palm up). Feel your bicep and tricep with the other hand. Which muscle is firmer and pulls your arm up toward your body?

a. tricep
b. bicep
c. both

12

TGT GAMESHEET: III.11.2 Muscles

Your hands are controlled by:

a. involuntary muscles
b. voluntary muscles
c. both

13

Your eyelids are controlled by:

a. involuntary muscles
b. voluntary muscles
c. both

14

The tissue that connects skeletal muscles to bones:

a. flexors
b. tendons
c. extensors

15

The type of muscle cells located only in the heart.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

16

Your heart is a(n):

a. involuntary muscle
b. voluntary muscle
c. both

17

Place your hand palm up on your desk. Press down on the desk. Feel your bicep and tricep with the other hand. Which muscle is firmer and extends your arm away from your body?

a. tricep
b. bicep
c. both

18

Your tongue is a(n):

a. involuntary muscle
b. voluntary muscle
c. both

19

Which exercise will probably strengthen your biceps?

a. push-ups
b. chin-ups
c. running

20

Diagram Z represents:

a. smooth muscle cells
b. skeletal muscle cells
c. cardiac muscle cells

21

Diagram X represents:

a. smooth muscle cells
b. skeletal muscle cells
c. cardiac muscle cells

22

The muscle type that moves more quickly than the other two.

a. smooth muscle
b. skeletal muscle
c. cardiac muscle

23

A condition common in children consisting of gradual and progressive destruction of muscle fibers.

a. bursitis
b. muscular dystrophy
c. Achille's tendon

24

The type of involuntary muscles located in internal organs.

a. smooth muscles
b. skeletal muscles
c. cardiac muscles

25

Working muscles get:

a. short and firm
b. long and thin
c. long and firm

26

Your arms are controlled by:

a. involuntary muscles
b. voluntary muscles
c. both

27

TGT GAMESHEET: III.11.2 Muscles

Muscles work by: a. pushing b. contracting c. sliding 28	The name of the extensor muscle in the arm. a. bicep b. tricep c. tendon 29	The muscle type that moves food, blood and urine. a. smooth muscle b. skeletal muscle c. cardiac muscle 30

GAMESHEET ANSWERS

III.11.2 Muscles

1. a) bicep
2. a) smooth muscle
3. c) both
4. b) skeletal muscle
5. c) extensors
6. a) involuntary muscles
7. c) cardiac muscle
8. a) flexors
9. b) hernia
10. c) cardiac muscle cells
11. a) smooth and cardiac
12. b) bicep
13. b) voluntary muscles
14. c) both
15. b) tendons
16. c) cardiac muscle
17. a) involuntary muscle
18. a) tricep
19. c) both
20. b) chin-ups
21. b) skeletal muscle cells
22. a) smooth muscle cells
23. b) skeletal muscle
24. b) muscular dystrophy
25. a) smooth muscles
26. a) short and firm
27. b) voluntary muscles
28. b) contracting
29. b) tricep
30. a) smooth muscle

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Reproduction: Cell Division

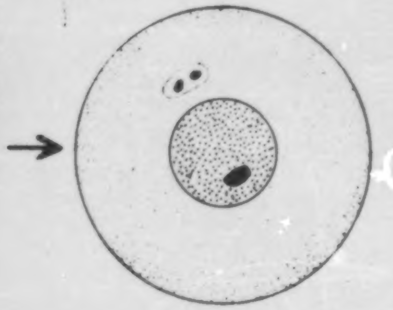
Objective: III.12.1--a. Students will identify the major phases of mitosis.
b. Students will identify the major parts of a cell involved in cell division.

Instructions: This worksheet will help you prepare for the Cell Division Game. Study the vocabulary and each diagram carefully. For items 1-9, choose the correct letter. For items 10-22, use the practice diagram sheet and write the phase of mitosis that the item describes.

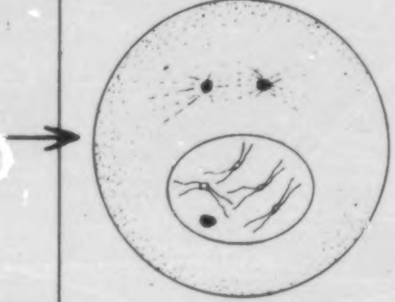
Vocabulary: cell division, centriole, chromosome, mitosis, spindle

---

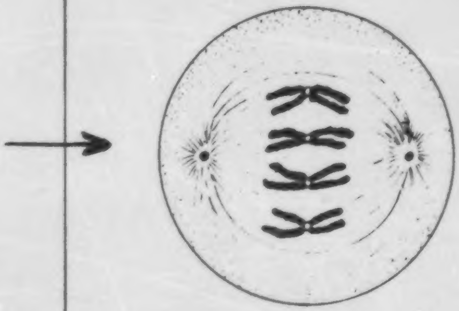
MAJOR PHASES OF MITOSIS



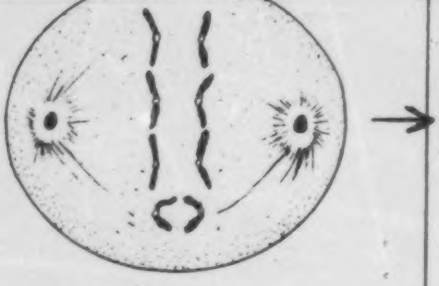
Interphase (non-dividing phase before mitosis)



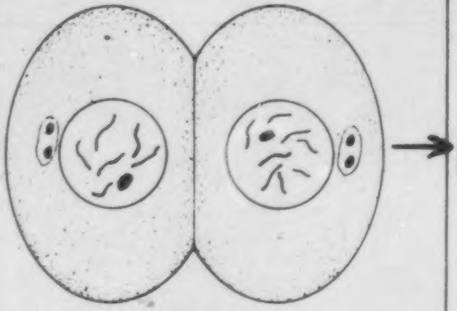
Prophase (the first phase of mitosis)



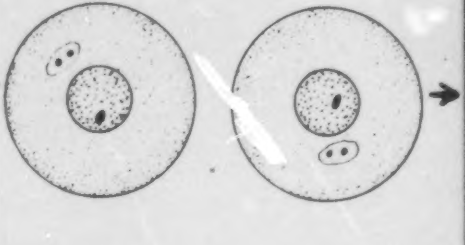
Metaphase (the second phase of mitosis)



Anaphase (the third phase of mitosis)



Telophase (the fourth phase of mitosis)



Two new cells

TGT WORKSHEET: III.12.1 Cell Division

Mitosis is a process in living things that:

a. does not happen very often.
b. stops at the end of each phase.
c. repeats itself over and over again.

1

The tiny, thread-line parts found in the nucleus that are visible during cell division are:

a. chromosomes
b. centrioles
c. cytoplasm

2

The two small structures in an animal cell that lie just outside the nucleus are:

a. chromosomes
b. centrioles
c. cytoplasm

3

The fine threads formed between the two centrioles during mitosis are called:

a. cell plates
b. spindles
c. chromatin

4

Cell division is an important process because living things:

a. reproduce
b. grow
c. both a and b

5

Plant cells do not have:

a. chromosomes
b. a nucleus
c. centrioles

6

During mitosis, plant cells:

a. form a new cell wall across the middle of the cell.
b. pinch in half to become two separate cells.
c. do not carry on cell division.

7

During cell division, two cells divide to become four, four cells become eight, and then:

a. 8 cells become 12
b. 8 cells become 16
c. 8 cells become 64

8

The number of phases of mitosis are:

a. 6
b. 5
c. 4

9

The non-dividing phase before mitosis.

____

10

Two sets of chromosomes separate and move to opposite ends of the cell.

____

11

Centrioles move apart; chromosomes shorten, thicken and are joined in the middle; the nuclear membrane disappears.

____

12

Two new identical cells are separate and the chromosomes are no longer visible.

____

13

The double chromosomes line up across the middle of the cell and attach to spindle fibers.

____

14

The chromosomes duplicate, but they are not visible.

____

15

TGT WORKSHEET: III.12.1 Cell Division

Each set of chromosomes are enclosed in a nuclear membrane. The chromosomes look like long threads again and the cytoplasm begins to divide. ____________ 16	1st phase of mitosis ____________ 17	2nd phase of mitosis ____________ 18
3rd phase of mitosis ____________ 19	4th phase of mitosis ____________ 20	During what phase of mitosis does the greatest difference between plant and animal cells appear? ____________ 21

WORKSHEET ANSWERS

III.12.1 Cell Division

1. c) repeats itself over and over again
2. a) chromosomes
3. b) centrioles
4. b) spindles
5. c) both a and b
6. c) centrioles
7. a) form a new cell wall across the middle of the cell
8. b) 8 cells become 16
9. c) 4
10. interphase
11. anaphase
12. prophase
13. two new cells
14. metaphase
15. interphase
16. telophase
17. prophase
18. metaphase
19. anaphase
20. telophase
21. telophase

TGT GAMESHEET: III.12.1 Cell Division

The fine threads formed between the two centrioles during mitosis are called:

a. cell plates
b. spindles
c. chromatin

1

The number of phases of mitosis are:

a. 6
b. 5
c. 4

2

In this phase, the chromosomes duplicate, but they are not visible.

____

3

In this phase, the double chromosomes line up across the middle of the cell and attach to spindle fibers.

____

4

4th phase of mitosis

____

5

Plant cells do not have:

a. chromosomes
b. a nucleus
c. centrioles

6

The non-dividing phase before mitosis.

____

7

During cell division, two cells divide to become four, four cells become eight, and then:

a. 8 cells become 12
b. 8 cells become 16
c. 8 cells become 64

8

3rd phase of mitosis

____

9

The two small structures in an animal cell that lie just outside the nucleus are:

a. chromosomes
b. centrioles
c. cytoplasm

10

The tiny, thread-like parts found in the nucleus that are visible during cell division are:

a. chromosomes
b. centrioles
c. cytoplasm

11

In this phase, centrioles move apart; chromosomes shorten, thicken and are joined in the middle; the nuclear membrane disappears.

____

12

In this phase, each set of chromosomes are enclosed in a nuclear membrane. The chromosomes look like long threads again and the cytoplasm begins to divide.

____

13

During this phase of mitosis, the greatest difference between plant and animal cells occurs.

____

14

Mitosis is a process in living things that:

a. does not happen very often
b. stops at the end of each phase.
c. repeats itself over and over again.

15

TGT GAMESHEET: III.12.1 Cell Division

During mitosis, plant cells:

a. form a new cell wall across the middle of the cell.
b. pinch in half to become two separate cells.
c. do not carry on cell division.

16

In this phase two sets of chromosomes separate and move to opposite ends of the cell.

____

17

Cell division is an important process because living things:

a. reproduce
b. grow
c. both a and b

18

1st phase of mitosis

____

19

At this stage, two new identical cells are separate and the chromosomes are no longer visible.

____

20

2nd phase of mitosis

____

21

GAMESHEET ANSWERS

III.12.1 Cell Division

1. b) cell plates
2. c) 4
3. interphase
4. metaphase
5. telophase
6. c) centrioles
7. interphase
8. b) 8 cells become 16
9. anaphase
10. b) centrioles
11. a) chromosomes
12. prophase
13. telophase
14. telophase
15. c) repeats itself over and over again
16. a) form a new cell wall across the middle of the cell
17. anaphase
18. c) both a and b
19. prophase
20. two new cells
21. metaphase

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Reproduction: Asexual Reproduction

Objective: III.12.2--a. Students will distinguish among five methods of asexual reproduction.
b. Students will identify organisms that reproduce asexually.

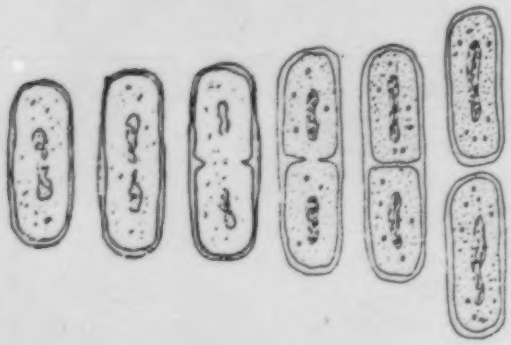
Instructions: This worksheet will help you prepare for the Asexual Reproduction Game. Study the vocabulary and diagrams carefully. For each item, match the type of reproduction with its description or with the organism which carries on that type of reproduction.

Vocabulary:

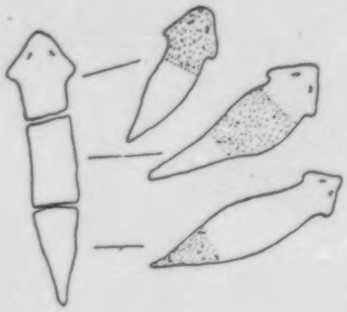
binary fission
budding
regeneration
spore formation
vegetative propagation

EXAMPLES OF METHODS OF ASEXUAL REPRODUCTION

1. Binary fission

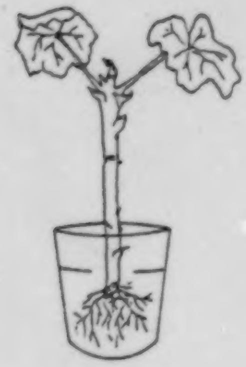


2. Regeneration

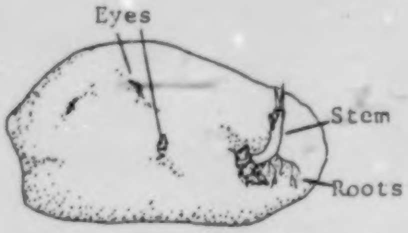


TGT WORKSHEET: III.12.2 Asexual Reproduction

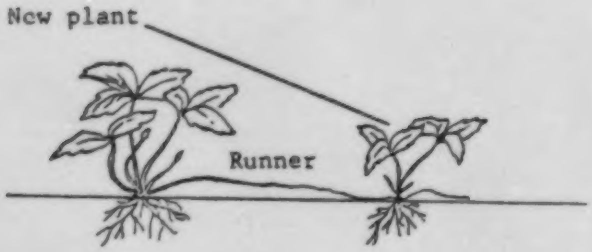
3. Vegetable propagation

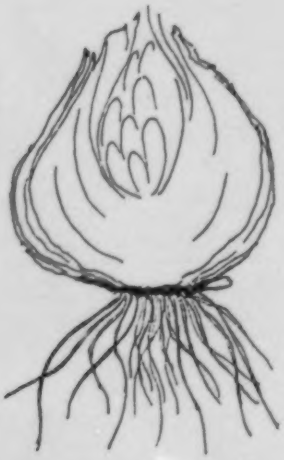


Geranium cuttings


Eyes
Stem
Roots

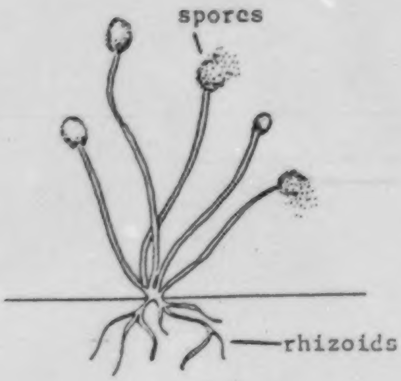
Vegetative propagation of a potato.


New plant
Runner

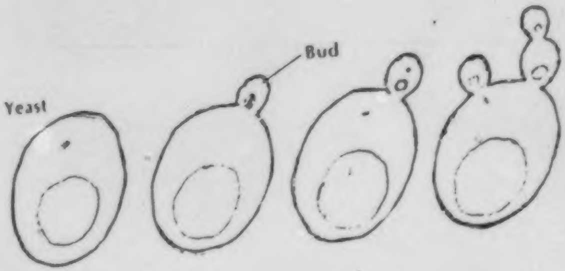


Cross section of a hyacinth bulb.

4. Spore formation


spores
rhizoids

5. Budding



TGT WORKSHEET: III.12.2 Asexual Reproduction

A fleshy root can develop leaves and a stem to form a new plant.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

1

An organism grows a new body part to replace a lost one.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

2

A stem cutting forms roots and becomes a new plant.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

3

The buds or "eyes" of a tuber form a new plant.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

4

A single-celled organism divides to form two new cells.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

5

The outgrowth of an organism develops into a new offspring.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

6

Small bulbs detach from larger ones to develop into complete plants.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

7

Many special cells are produced and grow into new organisms.

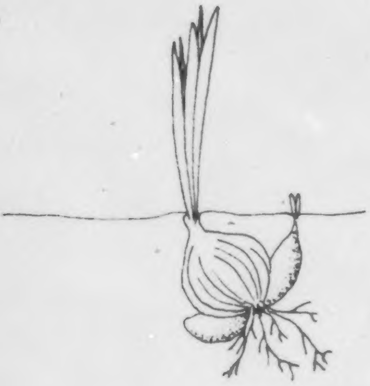
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

8

A runner grows along the ground. When a bud touches the ground, it roots and produces a new plant.

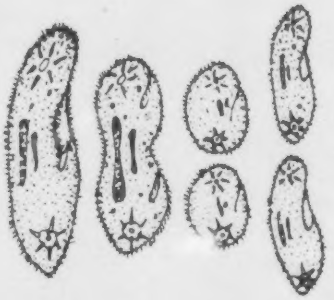
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

9



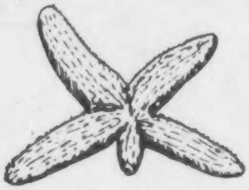
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

10



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

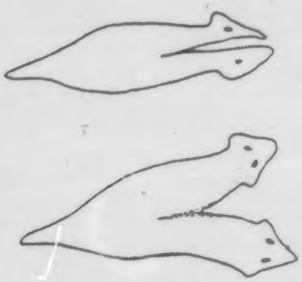
11



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

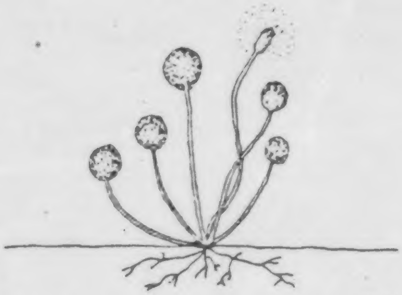
12

TGT WORKSHEET: III.12.2 Asexual Reproduction



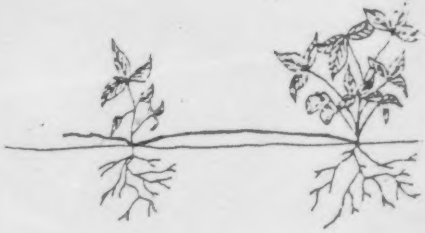
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

13



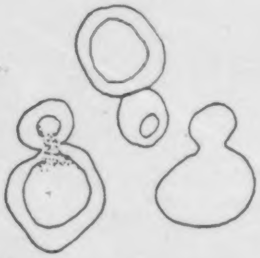
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

14



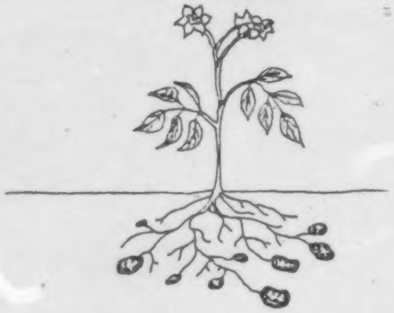
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

15



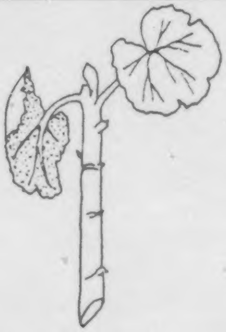
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

16



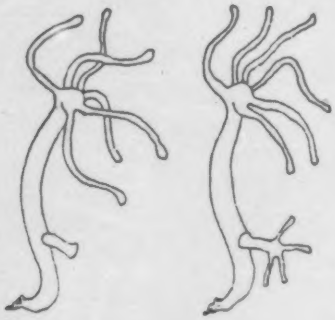
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

17



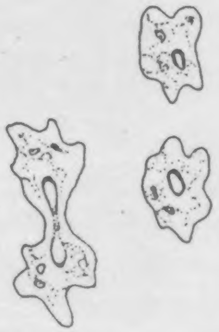
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

18



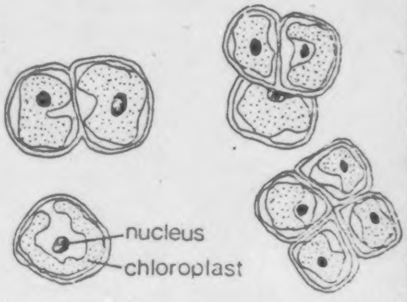
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

19



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

20



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

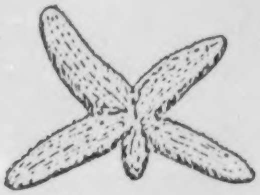
21

WORKSHEET ANSWERS

III.12.2 Asexual Reproduction

1. e) vegetative propagation
2. c) regeneration
3. e) vegetative propagation
4. e) vegetative propagation
5. a) binary fission
6. b) budding
7. e) vegetative propagation
8. d) spore formation
9. e) vegetative propagation
10. e) vegetative propagation
11. a) binary fission
12. c) regeneration
13. c) regeneration
14. d) spore formation
15. e) vegetative propagation
16. b) budding
17. e) vegetative propagation
18. e) vegetative propagation
19. b) budding
20. a) binary fission
21. a) binary fission

TGT GAMESHEET: III.12.2 Asexual Reproduction



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

1

A runner grows along the ground. When a bud touches the ground, it roots and produces a new plant.

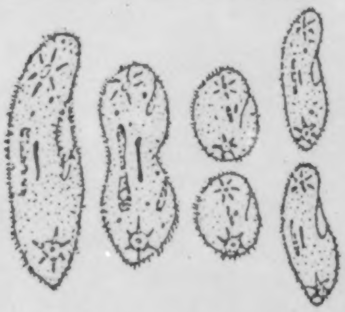
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

2

The buds or "eyes" of a tuber form a new plant.

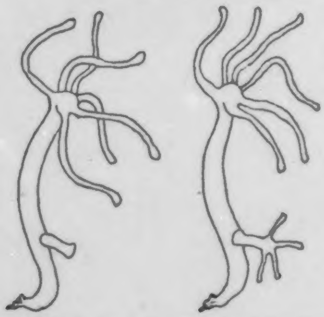
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

3



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

4



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

5

Many special cells are produced and grow into new organisms.

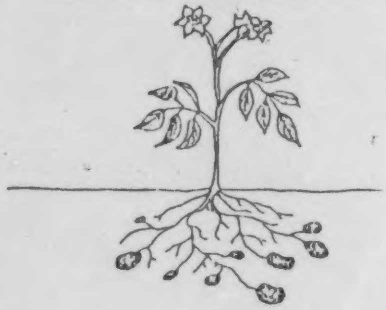
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

6

A stem cutting forms roots and becomes a new plant.

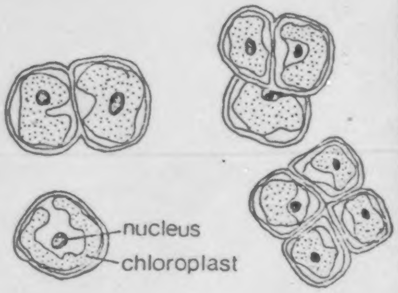
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

7



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

8



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

9

TGT GAMESHEET: III.12.2 Asexual Reproduction

The outgrowth of an organism develops into a new offspring.

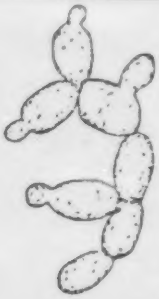
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

10

A single-celled organism divides to form two new cells.

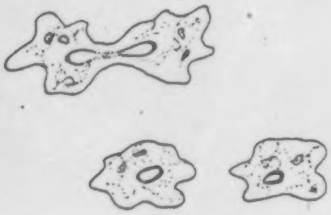
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

11



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

12



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

13

Small bulbs detach from larger ones to develop into complete plants.

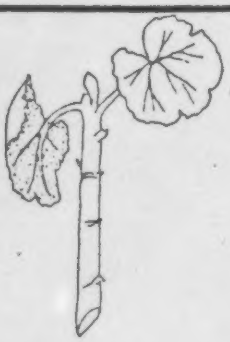
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

14

A fleshy root can develop leaves and a stem to form a new plant.

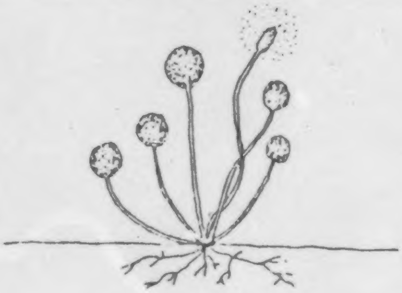
a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

15



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

16



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

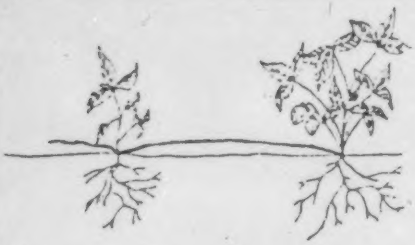
17

An organism grows a new body part to replace the lost one.

a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

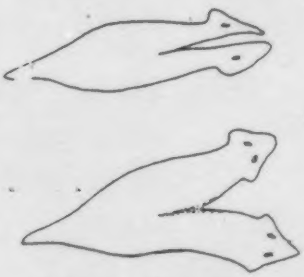
13

TGT GAMESHEET: III.12.2 Asexual Reproduction



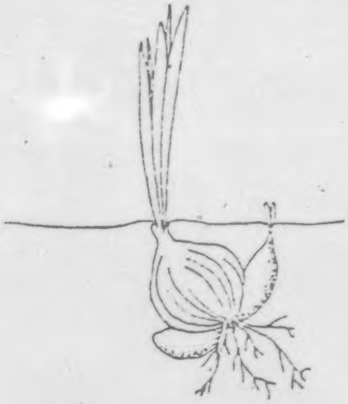
- binary fission
- budding
- regeneration
- spore formation
- vegetative propagation

19



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

20



a. binary fission
b. budding
c. regeneration
d. spore formation
e. vegetative propagation

21

GAMESHEET ANSWERS

III.12.2 Asexual Reproduction

1. c) regeneration
2. e) vegetative propagation
3. e) vegetative propagation
4. a) binary fission
5. b) budding
6. d) spore formation
7. e) vegetative propagation
8. e) vegetative propagation
9. a) binary fission
10. b) budding
11. a) binary fission
12. b) budding
13. a) binary fission
14. e) vegetative propagation
15. e) vegetative propagation
16. e) vegetative propagation
17. d) spore formation
18. c) regeneration
19. e) vegetative propagation
20. c) regeneration
21. e) vegetative propagation

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Reproduction: Plant Sexual Reproduction

Objective: III.12.3.1--a. Students will identify the parts and function of each part of a flower.
b. Students will distinguish between pollination and fertilization.

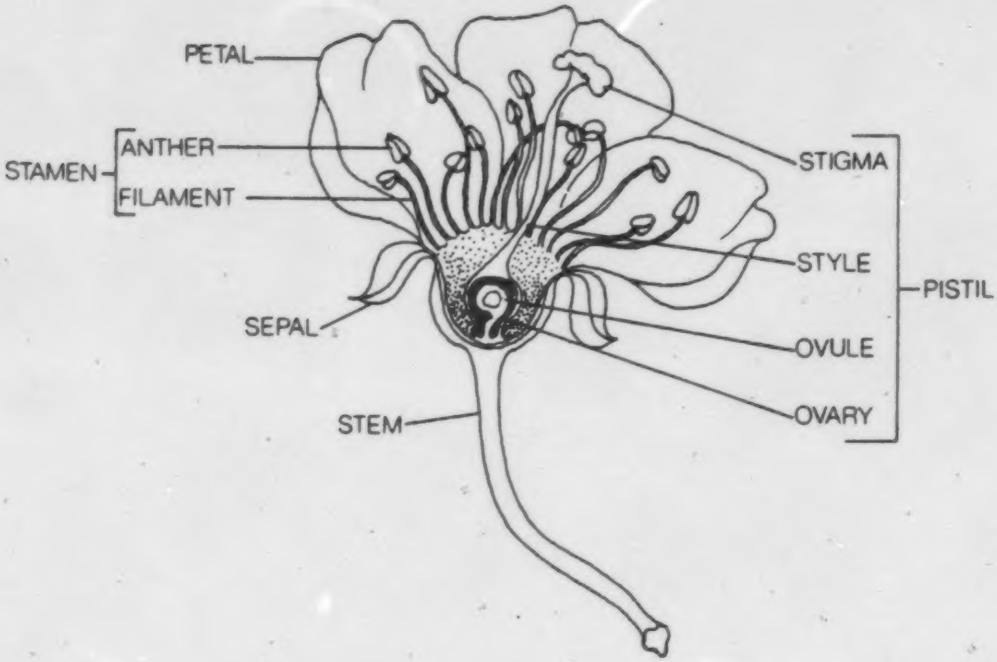
Instructions: This worksheet will help you prepare for the Plant Sexual Reproduction Game. Study the parts of a flower and the steps in fertilization of a flower carefully. Choose the answer for each item on the worksheet.

Vocabulary:

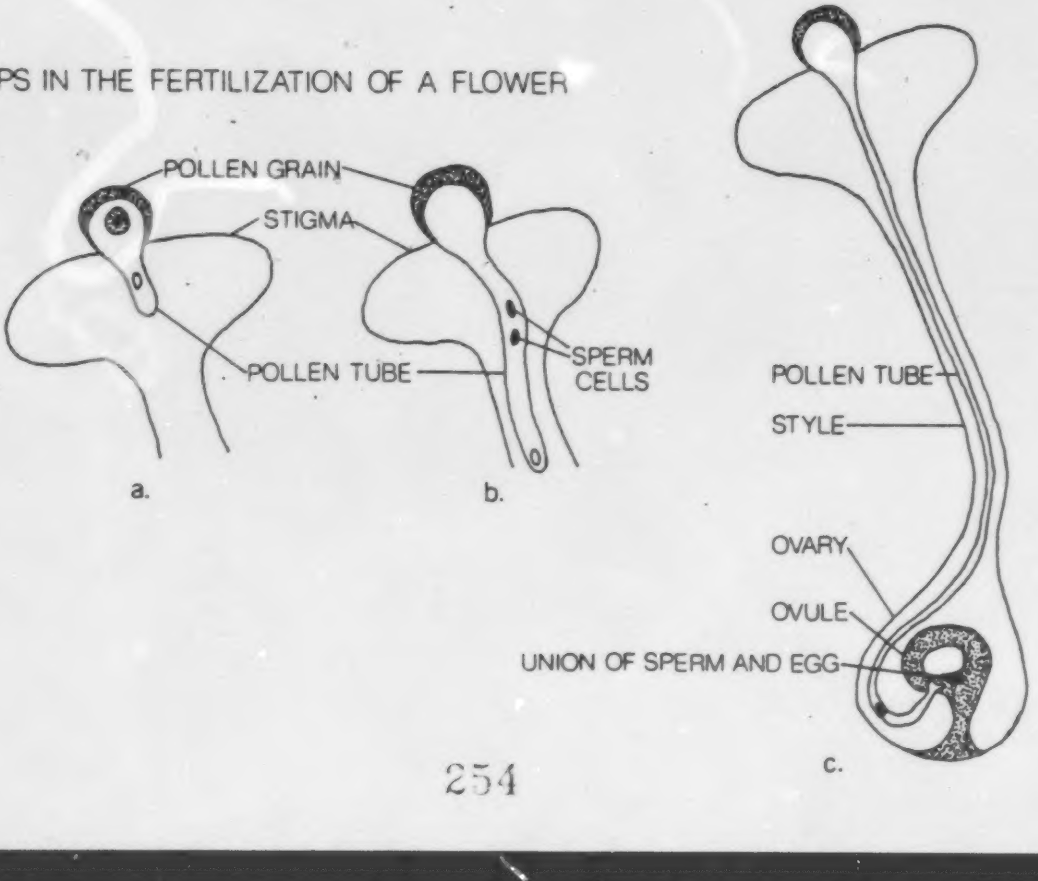
anther
egg cell
embryo
fertilization
filament
germination
ovary
ovule
petals
pistil
pollen
pollination
seed
seed dispersal
sepal
sperm cell
stamen
stigma
style

TGT WORKSHEET: III.12.3.1 Plant Sexual Reproduction

PARTS OF A FLOWER


PETAL
STAMEN
ANTHER
FILAMENT
SEPAL
STEM
STIGMA
STYLE
OVULE
OVARY
PISTIL

STEPS IN THE FERTILIZATION OF A FLOWER


POLLEN GRAIN
STIGMA
POLLEN TUBE
SPERM CELLS
a.
b.
POLLEN TUBE
STYLE
OVARY
OVULE
UNION OF SPERM AND EGG
c.

TGT WORKSHEET: III.12.3.1 Plant Sexual Reproduction

The union of a sperm cell and an egg cell is

a. pollination
b. fertilization
c. germination

1

The male reproductive organ of the flower is the

a. pistil
b. stamen
c. anther

2

The female reproductive organ of the flower is the

a. pistil
b. stamen
c. anther

3

The stamen consists of two parts, the

a. pistil and anther
b. anther and filament
c. anther and sepal

4

The anther produces

a. eggs
b. seeds
c. pollen grains

5

The slender neck of the pistil is the

a. filament
b. style
c. stigma

6

The topmost part of the pistil is the

a. filament
b. style
c. stigma

7

The slender structure that supports the anther is the

a. pistil
b. filament
c. style

8

The enlarged base of the pistil is the

a. anther
b. ovule
c. ovary

9

It produces the sperm cells.

a. pollen grain
b. ovule
c. petals

10

It produces the egg cells.

a. pollen grain
b. ovule
c. petals

11

Pollen grains transferring from the anther to the stigma is

a. pollination
b. fertilization
c. germination

12

They protect the reproductive organs of the flower.

a. sepals and petals
b. stamen and pistil
c. stamen and petals

13

In order to reach an ovule, a pollen tube grows through the

a. stigma, stamen, petal
b. stigma, style, ovary
c. sepals, stamen, stigma

14

The sex cells are located in the

a. sepals and petals
b. fruit and seed
c. stamens and pistils

15

TGT WORKSHEET: III.12.3.1 Plant Sexual Reproduction

A seed is a ripened

a. ovule
b. sepal
c. ovary

16

The fruit is the ripened

a. ovule
b. sepal
c. ovary

17

The fertilized egg forms the

a. embryo plant
b. fruit
c. sepal

18

Seeds contain

a. embryo, petals, stored food
b. petals, stored food, a coat
c. a coat, embryo, stored food

19

Birds and bees help to

a. pollinate flowers
b. scatter seeds
c. both a and b

20

Nuts, grains and "helicopters" are

a. seeds
b. fruits
c. flowers

21

Beans and peas are

a. seeds
b. fruits
c. flowers

22

The egg is fertilized in the

a. style
b. stigma
c. ovule

23

The fleshy fruit of a peach is formed by

a. an ovule
b. an ovary
c. pollen

24

This fruit has only one ovule.

a. apple
b. tomato
c. plum

25

Maple, dandelion and milkweed seeds are dispersed largely by

a. wind
b. animals
c. water

26

Fleshy, edible fruits and seeds are dispersed by

a. wind
b. animals
c. water

27

The early growth of a plant from a seed is

a. pollination
b. fertilization
c. germination

28

The female reproductive parts of a flower are the

a. stamen, ovary, anther, style
b. style, stigma, ovary, ovule
c. style, stamen, ovary, ovule

29

It transports a sperm cell nucleus to the ovule.

a. pollen tube
b. filament
c. style

30

WORKSHEET ANSWERS

III.12.3.1 Plant Sexual Reproduction

1. b) fertilization
2. b) stamen
3. a) pistil
4. b) anther and filament
5. c) pollen grains
6. b) style
7. c) stigma
8. b) filament
9. c) ovary
10. a) pollen grain
11. b) ovule
12. a) pollination
13. a) sepals and petals
14. b) stigma, style, ovary
15. c) stamens and pistils
16. a) ovule
17. c) ovary
18. a) embryo plant
19. c) a coat, embryo, stored food
20. c) both a and b
21. b) fruits
22. a) seeds
23. c) style
24. b) an ovary
25. c) plum
26. a) wind
27. b) animals
28. c) germination
29. b) style, stigma, ovary, ovule
30. a) pollen tube

TGT GAMESHEET: III.12.3.1 Plant Sexual Reproduction

The slender structure that supports the anther is the

a. pistil
b. filament
c. style

1

Maple, dandelion and milkweed seeds are dispersed largely by

a. wind
b. animals
c. water

2

The slender neck of the pistil is the

a. filament
b. style
c. stigma

3

The union of a sperm cell and an egg cell is

a. pollination
b. fertilization
c. germination

4

Fleshy, edible fruits and seeds and dispersed by

a. wind
b. animals
c. water

5

Seeds contain

a. embryo, petals, stored food
b. petals, stored food, a coat
c. a coat, embryo, stored food

6

The male reproductive organ of the flower is the

a. pistil
b. stamen
c. anther

7

The egg is fertilized in the

a. style
b. stigma
c. ovule

8

It transports a sperm cell nucleus to the ovule.

a. pollen tube
b. filament
c. style

9

It produces the egg cells.

a. pollen grain
b. ovule
c. petals

10

Nuts, grains and "helicopters" are

a. seeds
b. fruits
c. flowers

11

Birds and bees help to

a. pollinate flowers
b. scatter seeds
c. both a and b

12

The fleshy fruit of a peach is formed by

a. an ovule
b. an ovary
c. pollen

13

A seed is a ripened

a. ovule
b. sepal
c. ovary

14

The topmost part of the pistil is the

a. filament
b. style
c. stigma

15

TGT GAMESHEET: III.12.3.1 Plant Sexual Reproduction

The female reproductive organ of the flower is the

a. pistil
b. stamen
c. ovary

16

This fruit has only one ovule.

a. apple
b. tomato
c. plum

17

The enlarged base of the pistil is the

a. anther
b. ovule
c. ovary

18

They protect the reproductive organs of the flower.

a. sepals and petals
b. stamen and pistil
c. stamen and petals

19

The stamen consists of two parts, the

a. pistil and anther
b. anther and filament
c. anther and sepal

20

The fertilized egg forms the

a. embryo plant
b. fruit
c. sepal

21

The female reproductive parts of a flower are the

a. stamen, ovary, anther, style
b. style, stigma, ovary, ovule
c. style, stamen, ovary, ovule

22

Pollen grains transferring from the anther to the stigma is

a. pollination
b. fertilization
c. germination

23

The anther produces

a. eggs
b. seeds
c. pollen grains

24

It produces the sperm cells.

a. pollen grain
b. ovule
c. petals

25

In order to reach an ovule, a pollen tube grows through the

a. stigma, stamen, petal
b. stigma, style, ovary
c. sepals, stamen, stigma

26

The early growth of a plant from a seed is

a. pollination
b. fertilization
c. germination

27

The fruit is the ripened

a. ovule
b. sepal
c. ovary

28

The sex cells are located in the

a. sepals and petals
b. fruit and seed
c. stamens and pistils

29

Beans and peas are

a. seeds
b. fruits
c. flowers

30

GAMESHEET ANSWERS

III.12.3.1 Plant Sexual Reproduction

1. b) filament
2. a) wind
3. b) style
4. b) fertilization
5. b) animals
6. c) a coat, embryo, stored food
7. b) stamen
8. c) ovule
9. a) pollen tube
10. b) ovule
11. b) fruits
12. c) both a and b
13. b) an ovary
14. a) ovule
15. c) stigma
16. a) pistil
17. c) plum
18. c) ovary
19. a) sepals and petals
20. b) anther and filament
21. a) embryo plant
22. b) style, stigma, ovary, ovule
23. a) pollination
24. c) pollen grains
25. a) pollen grain
26. b) stigma, stamen, petal
27. c) germination
28. c) ovary
29. c) stamens and pistils
30. a) seeds

TGT PHYSICAL SCIENCE

UNIT: Life Processes

WORKSHEET: Reproduction: Sexual Reproduction Vocabulary

Objective: III.12.3.2a--a. Students will define terms or symbols associated with the sexual reproduction unit.

b. Students will match the vocabulary terms or symbols with their definitions or descriptions.

Instructions: This worksheet will help prepare you for the Sexual Reproduction Vocabulary Game. Define and study each term below carefully. For each item match the vocabulary term with its definition or description.

Vocabulary:

♀ ♂
birth canal
conjugation
courtship
egg
embryo
fertilization
fetus
gamete
gestation
gonads
incubation
internal fertilization
litter
mammary glands
mating
milt
ovary
oviducts
placenta
roe
spawn
sperm
testis (pl. testes)
umbilical cord
uterus
yolk
zygote

TGT WORKSHEET: III.12.3.2a Sexual Reproduction Vocabulary

The time between fertilization and birth. 1	The fertilized egg resulting from the union of a sperm and an egg. 2	The tube connecting the ovary and the uterus. 3
♀ is the symbol for a: 4	The type of sexual reproduction in protists. 5	A clump of fish eggs. 6
A number of young brought forth at one birth. 7	The stored food in eggs. 8	The male and female reproductive organs. 9
The sperm-containing fluid of fishes. 10	The embryo of a mammal after the main body features are apparent. 11	The mass of eggs discharged by an aquatic animal. 12
The egg and sperm join outside the body of the female. 13	♂ is the symbol for a: 14	The egg and sperm join inside the body of the female. 15
The reproductive cell from the male parent. 16	The structure which connects the embryo to the placenta. 17	The process in which a sperm cell and egg cell unite. 18
A developing organism in its earliest stage of development. 19	A behavior in which organisms are together for the purpose of reproduction. 20	The female reproductive organ. 21
A structure which attaches the embryo to the wall of the uterus. 22	The male reproductive organs. 23	Where a baby mammal is pushed out when it is born. 24
A behavior usually performed by a male to attract a female. 25	The reproductive cell from the female parent. 26	The organ in mammals which holds and nourishes the developing embryo until it is born. 27
Produce milk to feed a baby mammal. 28	A reproductive cell; an egg or sperm cell. 29	Helps in the process of hatching eggs. 30

WORKSHEET ANSWERS

III.12.3.2a Sexual Reproduction Vocabulary

1. gestation
2. zygote
3. oviduct
4. female
5. conjugation
6. roe
7. litter
8. yolk
9. gonads
10. milt
11. fetus
12. spawn
13. external fertilization
14. male
15. internal fertilization
16. sperm
17. umbilical cord
18. fertilization
19. embryo
20. mating
21. ovary
22. placenta
23. testes
24. birth canal
25. courtship
26. egg
27. uterus
28. mammary glands
29. gamete
30. incubation

TGT GAMESHEET: III.12.3.2a Sexual Reproduction Vocabulary

The process in which a sperm cell and egg cell unite. 1	The structure which connects the embryo to the placenta. 2	The reproductive cell from the male parent. 3
Helps in the process of hatching eggs. 4	The egg and sperm join outside the body of the female. 5	The sperm-containing fluid of fishes. 6
A number of young brought forth at one birth. 7	A reproductive cell; an egg or sperm cell. 8	♂ is the symbol for a: 9
A developing organism in its earliest stage of development. 10	The time between fertilization and birth. 11	The fertilized egg resulting from the union of a sperm and an egg. 12
An organ in mammals which holds and nourishes the developing embryo until it is born. 13	The type of sexual reproduction in protists. 14	The reproductive cell from the female parent. 15
A behavior usually performed by a male to attract a female. 16	The male reproductive organs. 17	The stored food in eggs. 18
The embryo of a mammal after the main body features are apparent. 19	♀ is the symbol for a: 20	A structure which attaches the embryo to the wall of the uterus. 21
A behavior in which organisms are together for the purposes of reproduction. 22	The tube connecting the ovary and the uterus. 23	The egg and sperm join inside the body of the female. 24
Where a baby mammal is pushed out when it is born. 25	A clump of fish eggs. 26	The female reproductive organ. 27
The mass of eggs discharged by aquatic animals. 28	The male and female reproductive organs. 29	Produce milk to feed a baby mammal. 30

GAMESHEET ANSWERS

III.12.3.2a Sexual Reproduction Vocabulary

1. fertilization
2. umbilical cord
3. sperm
4. incubation
5. external fertilization
6. milt
7. litter
8. gamete
9. male
10. embryo
11. gestation
12. zygote
13. uterus
14. conjugation
15. egg
16. courtship
17. testes
18. yolk
19. fetus
20. female
21. placenta
22. mating
23. oviduct
24. internal fertilization
25. birth canal
26. roe
27. ovary
28. spawn
29. gonads
30. mammary glands

TGT LIFE SCIENCE

UNIT: Life Processes

WORKSHEET: Reproduction: Vertebrate Sexual Reproduction

Objective: III.12.3.2b --Students will classify vertebrates according to the method by which the egg is fertilized, the embryo is developed, and the method by which vertebrates care for their young.

Instructions: This worksheet will help you prepare for the Vertebrate Sexual Reproduction Game. Carefully study the chart and vocabulary below. For each vertebrate named on the worksheet, select the correct letter.

a. Live-bearer with internal fertilization and development with parental care.

b. Live-bearer with internal fertilization and development with no parental care.

c. Egg-layer with internal fertilization and external development and parental care.

d. Egg-layer with internal fertilization and external development and no parental care.

e. Egg-layer with external fertilization and development and parental care.

f. Egg-layer with external fertilization and development and no parental care.

Vocabulary:

external fertilization	The egg and sperm cells are joined outside of the body of the female.
internal fertilization	The egg and sperm cells are joined inside the body of the female.

TGT WORKSHEET: III.12.3.2b Vertebrate Sexual Reproduction

This chart shows the reproductive method for fish, amphibians, reptiles, birds, and mammals. Decide which category each of the vertebrates on the worksheet belongs in then you can choose the correct letter from the first page of the worksheet.

Comparing Methods of Reproduction

	Fish	Amphibians	Reptiles	Birds	Mammals
Fertilization	*External	External	Internal	Internal	Internal
Egg-layer or live-bearer (internal fertilization)	*(live-bearer)		*Egg-layer	Egg-layer	*Live-bearer
Development of embryo	*External (within an egg)	External (within an egg)	*External (within an egg)	External (within an egg)	*Internal (within the uterus)
Care of Young	*None	None	None	Protect and feed their young	Protect and produce milk to feed young

* Few exceptions.

TGT WORKSHEET: III.12.3.2b Vertebrate Sexual Reproduction

salmon 1	human 2	chicken 3
rattlesnake 4	whale 5	frog 6
snapping turtle 7	ostrich 8	monkey 9
bat 10	guppy 11	lizard 12
pigeon 13	perch 14	salamander 15
porpoise 16	trout 17	alligator 18
garden snake 19	robin 20	horse 21
mud puppy 22	pelican 23	housecat 24
crocodile 25	dolphin 26	duck-billed platypus 27
sparrow 28	sea turtle 29	shark 30

WORKSHEET ANSWERS

III.12.3.2b Vertebrate Sexual Reproduction

1. f
2. a
3. c
4. b
5. a
6. f
7. d
8. c
9. a
10. a
11. b
12. d
13. c
14. f
15. f
16. a
17. f
18. d
19. b
20. c
21. a
22. f
23. c
24. a
25. d
26. a
27. c
28. c
29. d
30. f (exception shark, small tropical varieties)

TGT GAMESHEET: III.12.3.2b Vertebrate Sexual Reproduction

Instructions:

Select the letter of the answer that best describes the reproductive method for each vertebrate.

a. Live-bearer with internal fertilization and development with parental care.

b. Live-bearer with internal fertilization and development with no parental care.

c. Egg-layer with internal fertilization and external development and parental care.

d. Egg-layer with internal fertilization and external development and no parental care.

e. Egg-layer with external fertilization and development and parental care.

f. Egg-layer with external fertilization and development and no parental care.

salmon 1	rattlesnake 2	sea turtle 3
bat 4	owl 5	porpoise 6
garden snake 7	mud puppy 8	crocodile 9
penguin 10	gorilla 11	blue whale 12
ostrich 13	black mollie 14	catfish 15
trout 16	cardinal 17	heron 18
seal 19	tortoise 20	goose 21

TGT GAMESHEET: III.12.3.2b Vertebrate Sexual Reproduction

toad 22	kangaroo 23	iguana 24
newt 25	alligator 26	deer 27
dog 28	duck-billed platypus 29	sting ray 30

GAMESHEET ANSWERS

III.13.3.2b Vertebrate Sexual Reproduction

1. f
2. b
3. d
4. a
5. c
6. f
7. b
8. f
9. d
10. c
11. a
12. a
13. c
14. b
15. f
16. f
17. c
18. c
19. a
20. d
21. c
22. f
23. a
24. d
25. f
26. d
27. a
28. a
29. c
30. f

TGT LIFE SCIENCE

UNIT: Genetics

WORKSHEET: Genetics Vocabulary

Objective: IV.1--a. Students will define terms associated with genetics.
b. Students will select the trait or method of breeding that fits each group of words.

Instructions: This worksheet will help you prepare for the Genetics Vocabulary Game. Study each term below carefully. For items 1-22, match the vocabulary term with its definition or description. For items 23-30, study each group and give a title to show how the words are related. Select your titles from the starred (*) vocabulary terms.

Vocabulary:

adaptation
chromosome
*cross breeding (hybridization)
*dominant trait
gene
genetics
genotype
heredity
*hybrid
inherited trait
*incomplete dominance (blending)
Mendel, Gregor
*mutation
pedigree
phenotype
Punnett square
*pure trait
*recessive trait
*selection
sex chromosomes
sex-influence
*sex-linked trait
sibling
twins
  fraternal
  identical

TGT WORKSHEET: IV.1 Genetics Vocabulary

The scientific study of heredity. 1	It determines a specific hereditary trait. 2	He discovered the laws of heredity. 3
The weak hereditary trait. 4	An organism's adjustment to its environment. 5	The offspring of parents with opposite traits. 6
The passing of traits from parents to offspring. 7	Used to show the possible ways genes are transferred from parents to offspring. 8	The strong hereditary trait. 9
An inherited trait controlled by a gene carried on the X gene chromosome. 10	A new hereditary characteristic resulting from a change in the gene. 11	The choosing of certain individuals for breeding. 12
Two inherited traits combine and a third trait shows up. 13	The identical paired genes for a trait. 14	The actual genetic make-up of an organism. 15

TGT WORKSHEET: IV.1 Genetics Vocabulary

A trait that is dominant in one sex and recessive in the other. 16	The mating of two different varieties or breeds of organisms. 17	A person who has a gene for a trait but does not show the trait. 18
The physical appearance which a genotype determines. 19	Twins that develop when a single egg cell is fertilized by a single sperm. 20	Offspring of the same two parents. 21
The records of the marriages and births in several generations. 22	________________ mule Bradford cattle hybrid corn mutt or mongrel dog 23	________________ brown eyes free ear lobes tall pea plants smooth seeds 24
________________ seedless grapes silver foxes albino mice short-legged sheep 25	________________ blue eyes attached ear lobes short pea plants wrinkle seeds 26	________________ Tt BW Ss RW 27
________________ four o'clock shorthorn cattle snapdragons Andalusian chickens 28	________________ hemophilia color blindness 29	________________ TT rr SS gg 30

WORKSHEET ANSWERS

IV.1 Genetics Vocabulary

1. genetics
2. gene
3. Mendel
4. recessive
5. adaptation
6. hybrids
7. heredity
8. Punnett square
9. dominant
10. sex-linked
11. mutation
12. selection (breeding)
13. incomplete dominance
14. pure
15. genotype
16. sex-influence
17. cross-breeding
18. carrier
19. phenotype
20. identical
21. siblings
22. pedigree
23. cross breeding
24. dominant trait
25. mutation
26. recessive trait
27. hybrid
28. incomplete dominance (blending)
29. sex-linked trait
30. pure trait

TGT GAMESHEET: IV.1 Genetics Vocabulary

What are these examples of?

TT
rr
SS
gg

1

Twins that develop when a single egg cell is fertilized by a single sperm.

2

An inherited trait controlled by a gene carried on the X gene chromosome.

3

What are these examples of?

hemophilia
color blindness

4

The physical appearance which a genotype determines.

5

The strong hereditary trait.

6

What are these examples of?

four o'clock
shorthorn cattle
snapdragons
Andalusian chickens

7

A person who has a gene for a trait but does not show the trait.

8

Used to show the possible ways genes are transferred from parents to offspring.

9

What are these examples of?

Tt
BW
Ss
RW

10

The mating of two different varieties or breeds of organisms.

11

The passing of traits from parents to offspring.

12

What are these examples of?

blue eyes
attached ear lobes
short pea plants
wrinkle seeds

13

A trait that is dominant in one sex and recessive in the other.

14

The offspring of parents with opposite traits.

15

TGT GAMESHEET: IV.1 Genetics Vocabulary

What are these examples of? seedless grapes silver foxes short-legged sheep albino mice 16	The actual genetic make-up of an organism. 17	An organism's adjustment to its environment. 18
What are these examples of? brown eyes free ear lobes tall pea plants smooth seeds 19	The identical paired genes for a trait. 20	The weak hereditary trait. 21
What are these examples of? mule Bradford cattle hybrid corn mutt or mongrel dog 22	Two inherited traits combine and a third trait shows up. 23	He discovered the laws of heredity. 24
The records of the marriages and births in several generations. 25	The choosing of certain individuals for breeding. 26	It determines a specific hereditary trait. 27
Offspring of the same two parents. 28	A new hereditary characteristic resulting from a change in the gene. 29	The scientific study of heredity. 30

GAMESHEET ANSWERS

IV.1 Genetics Vocabulary

1. pure trait
2. identical
3. sex-linked trait
4. sex-linked trait
5. phenotype
6. dominant
7. incomplete dominance
8. carrier
9. Punnett square
10. hybrid
11. cross breeding
12. heredity
13. recessive trait
14. sex-influence
15. hybrids
16. mutation
17. genotype
18. adaptation
19. dominant trait
20. pure
21. recessive
22. cross breeding
23. incomplete dominance
24. Mendel
25. pedigree
26. selection (breeding)
27. gene
28. siblings
29. mutation
30. genetics

TGT LIFE SCIENCE

UNIT: Genetics

WORKSHEET: Dominance and Recession

Objective: IV.2--a. Students will identify and compare dominant traits and recessive traits which Mendel observed in pea plants.

b. Students will compute a problem showing the possible gene combinations from a cross between two organisms.

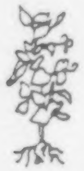
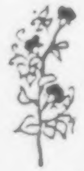
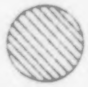
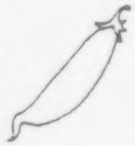
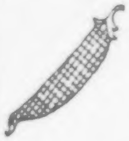
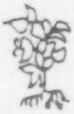
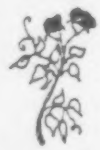
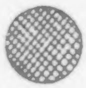
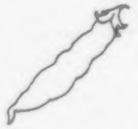
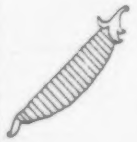
Instructions: This worksheet will help you prepare for the Dominance and Recession Game. Study the information sheet carefully. For items 1-18, complete the chart, filling in the phenotype of each parent and the first generation offspring; for items 19-27, use the information from the chart to answer each item; and for items 28-32, solve the problem, using a Punnett square.

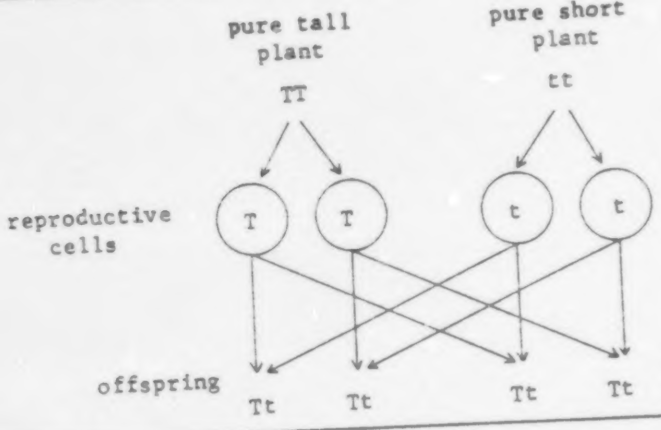
Vocabulary:

dominant trait
genotype
gene
hybrid
Mendel, Gregor
phenotype
Punnett square
recessive trait

TGT WORKSHEET: IV.2 Dominance and Recession

Traits Mendel Studied

stem length	flower position	seed shape	seed color	pod shape	pod color
 tall	 around the stem	 smooth (round)	 yellow	 full	 green
 short	 at end of stem	 wrinkled	 green	 pinched	 yellow


pure tall plant
TT
pure short plant
tt
reproductive cells
T
T
t
t
offspring
Tt
Tt
Tt
Tt

A cross between a pure tall plant (TT) and a pure short plant (tt), showing the possible gene combination.

sperm
(male genes)

egg
(female genes)

	t	t
T	Tt	Tt
T	Tt	Tt

A Punnett square set up showing the cross between the pure tall plant (TT) and the pure short plant (tt).

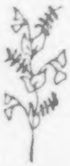
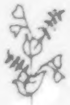
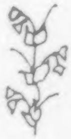
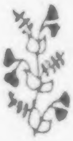
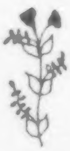
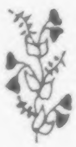
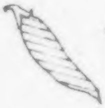
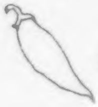
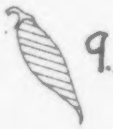
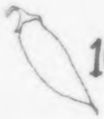
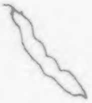
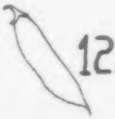
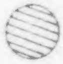
genotype: all Tt (100%)
phenotype: all Tall (hybrids)

TGT WORKSHEET: IV.2 Dominance and Recession

Instructions:

On items 1-18, tell the phenotype of each parent and of the first generation offspring.

INHERITED TRAITS IN PEA PLANTS

Trait	Pure Parents are Crossed			1st Generation Offspring
Height of stem	 1. ______	with	 2. ______	 3. ______
Position of flower on stem	 4. ______	with	 5. ______	 6. ______
Color of pod	 7. ______	with	 8. ______	 9. ______
Shape of pod	 10. ______	with	 11. ______	 12. ______
Color of seed	13. ______	with	 14. ______	15. ______
Shape of seed	16. ______	with	17. ______	18. ______

TGT WORKSHEET: IV.2 Dominance and Recession

The recessive trait for pod color is: __________ 19	The dominant trait for the position of the flower is: __________ 20	Each parent of the crosses is __________ for its trait. 21
The offspring resulting from each cross are: __________ 22	The dominant trait for seed shape is: __________ 23	What is the genotype of the offspring for stem height? __________ 24
What is the phenotype of the offspring for the position of the flowers? __________ 25	The recessive trait for pod shape is: __________ 26	What is the genotype of the offspring for pod color? __________ 27

Items 28-32: Use the following problem and a Punnett square to answer questions 28-32.

PROBLEM: Two hybrid yellows for seed color are crossed with each other.

What is the genotype of both hybrid parents? 28	What are the phenotypes of the possible offspring? 29	What fraction of the offspring will be pure yellow? (How many out of four squares?) 30
	What fraction of the offspring will be pure green? 31	What fraction of the offspring will be hybrids? 32

WORKSHEET ANSWERS

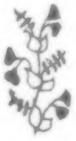
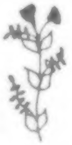
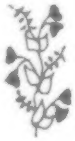
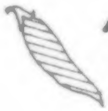
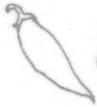
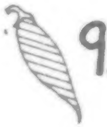
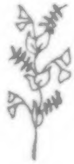
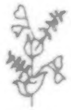
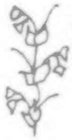
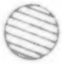
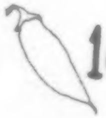
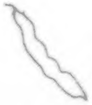
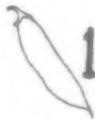
IV.2 Dominance and Recession

1. tall
2. short
3. tall
4. around the stem
5. at the end of the stem
6. around the stem
7. green
8. yellow
9. green
10. full
11. pinched
12. full
13. yellow
14. green
15. yellow
16. smooth
17. wrinkled
18. smooth
19. yellow (gg)
20. around the stem (AA)
21. pure
22. hybrids
23. smooth (SS)
24. Tt
25. around the stem
26. pinched (ff)
27. Gg
28. Yy
29. yellow, green seed color
30. 1/4
31. 1/4
32. 2/4 or 1/2

TGT GAMESHEET: IV.2 Dominance and Recession

Instructions:

For items 1-18, tell the phenotype of the parent or the first generation offspring. For items 19-27, use the information from the chart to answer each item.

INHERITED TRAITS IN PEA PLANTS		
Trait	Pure Parents Are Crossed	1st Generation Offspring
Position of flower on stem	 1. ______ with  2. ______	 3. ______
Shape of seed	4. ______ with 5. ______	6. ______
Color of pod	 7. ______ with  8. ______	 9. ______
Height of stem	 10. ______ with  11. ______	 12. ______
Color of seed	13. ______ with  14. ______	15. ______
Shape of pod	 16. ______ with  17. ______	 18. ______

TGT GAMESHEET: IV.2 Dominance and Recession

What is the phenotype of the offspring for stem height?

__________ 19

The dominant trait for pod shape is:

__________ 20

What is the genotype of the offspring for seed color?

__________ 21

The offspring resulting from each cross are:

__________ 22

The recessive trait for seed shape is:

__________ 23

What is the genotype of the offspring for pod shape?

__________ 24

The dominant trait for pod color is:

__________ 25

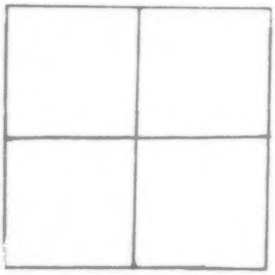
The recessive trait for the position of the flower is:

__________ 26

Each parent of the crosses is __________ for its trait. 27

Items 28-33: Use the following problem and a Punnett square to answer questions 28-33.

PROBLEM: Two hybrids for position of flowers on stem are crossed with each other.



What is the genotype of both hybrid parents? 28

What are the phenotypes of the possible offspring? 29

What fraction of the offspring will be pure for flowers at the end of the stem? (How many out of four squares?) 30

What fraction of the offspring will be pure for flowers around the stem? 31

What fraction of the offspring will be hybrids? 32

What fraction of the offspring will have flowers around the stem? 33

GAMESHEET ANSWERS

IV.2 Dominance and Recession

1. around the stem
2. at the end of the stem
3. around the stem
4. smooth
5. wrinkled
6. smooth
7. green
8. yellow
9. green
10. tall
11. short
12. tall
13. yellow
14. green
15. yellow
16. full
17. pinched
18. full
19. tall
20. full (FF)
21. Yy
22. hybrids
23. wrinkled (SS)
24. Ff
25. green (GG)
26. at the end of the stem
27. pure
28. Aa
29. flowers around the stem, flowers at the top of the stem
30. 1/4
31. 1/4
32. 2/4 or 1/2
33. 3/4

TGT LIFE SCIENCE

UNIT: Genetics

WORKSHEET: Incomplete Dominance

Objective: IV.3 Students will interpret information and solve problems about incomplete dominance in organisms.

Instructions: This worksheet will help you prepare for the Incomplete Dominance Game. Study the information on the next two pages carefully. For items 1-12, choose the letter for each item on the worksheet. For items 13-23, use the Punnett square to help you solve each problem.

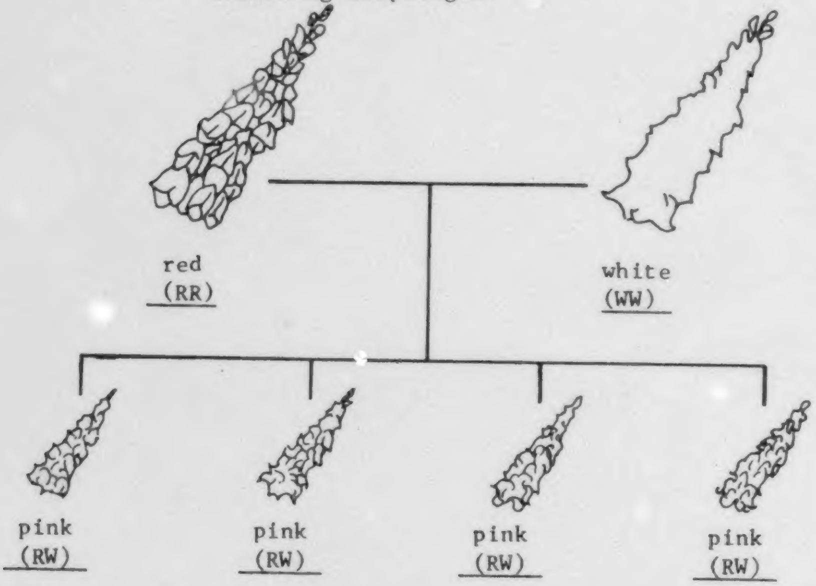
Vocabulary:

blending
hybrid
incomplete dominance
roan

TGT WORKSHEET: IV.3 Incomplete Dominance

Sometimes when organisms with opposite traits are crossed, the offspring do not look like either parent. Instead, the offspring show a blending of traits from both parents. For example, when a red-flowering snapdragon is crossed with a white-flowering snapdragon, the hybrid offspring are all pink. Neither the red nor the white color is dominant. This type of inheritance is called incomplete dominance.

Example A: Crossing a red-flowering snapdragon with a white-flowering snapdragon.



What will happen, then, when two pink snapdragons are crossed? Using a Punnett square, we see that:

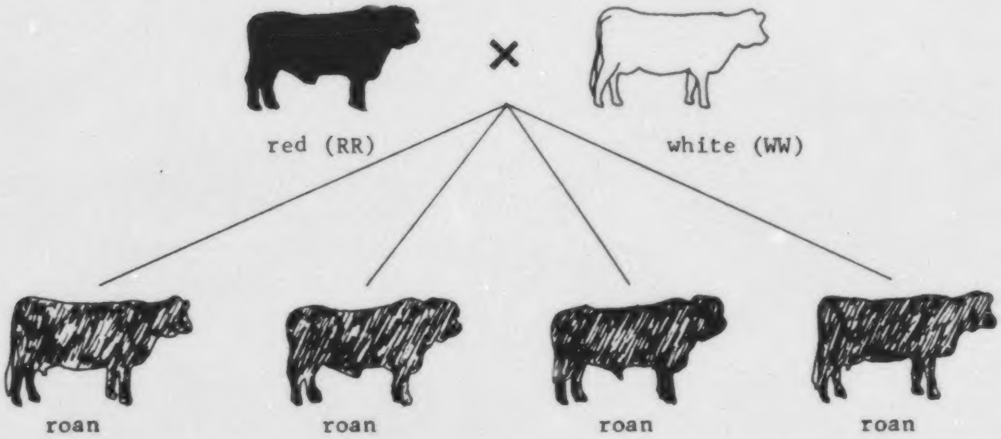
	R	W
R	RR	RW
W	RW	WW

Thus a cross between two pink snapdragons in the Punnett square produces one (25%) red flower or RR, two (50%) pink flowers or RW, and one (25%) white flower or WW.

TGT WORKSHEET: IV.3 Incomplete Dominance

Example B:

Another case of incomplete dominance occurs in Shorthorn cattle. When a red-haired bull is crossed with a white-haired cow, all of the hybrid offspring (calves) are roan. The roan animal has both red and white hairs.


×
red (RR)
white (WW)
roan
roan
roan
roan

TGT WORKSHEET: IV.3 Incomplete Dominance

The phenotype of the offspring in example A is:

a. red color
b. white color
c. pink color

1

The color a gardener would expect to find dominant among snapdragons is:

a. red
b. white
c. neither red nor white

2

The genotype of a pure red-flowering plant is:

a. RR
b. RW or WR
c. WW

3

The genotype of a pure white-flowering plant is:

a. RR
b. RW or WR
c. WW

4

The genotype of the offspring of a pure red-flowering and a pure white-flowering plant is:

a. RR
b. RW or WR
c. WW

5

Because the offspring have different genes for the same trait, the offspring are:

a. pure
b. prized organisms
c. hybrids

6

The phenotype of the offspring in example B is:

a. red color
b. pink color
c. roan color

7

The genotype of the bull (parent) in example B is:

a. RR
b. WW
c. RW or WR

8

The percentage of offspring in example B that are roan is:

a. 25%
b. 100%
c. 50%

9

The genotype of the offspring in example B is:

a. RR
b. RW or WR
c. WW

10

The white cow in example B is:

a. pure for white
b. hybrid for white
c. mutant for white

11

The roan offspring in example B are:

a. pure for white
b. hybrid for roan
c. mutant for roan

12

TGT WORKSHEET: IV.3 Incomplete Dominance

Items 13-16: Use a Punnett square to answer the questions.

PROBLEM: A farmer crossed a roan bull with a roan cow.

How would you represent the gene combination of this cross?

______ x ______
bull   cow

13

What would be the chance of getting a red calf?

____

14

What would be the chance of getting a white calf?

____

15

What would be the chance of getting a roan calf?

____

16

Items 17-23: Use a Punnett square to answer the questions.

PROBLEM: A farmer crossed a red-haired bull with a roan cow.

How would you represent the gene combination of this cross?

______ x ______
bull   cow

17

Would any of the offspring be red-haired?

____

18

Would any of the offspring be white-haired?

____

19

Would any of the offspring be roan color?

____

20

What type of cross would guarantee that all offspring would be red?

21

What type of cross would guarantee that all offspring would be white?

22

What type of cross would guarantee that all offspring would be roan?

23

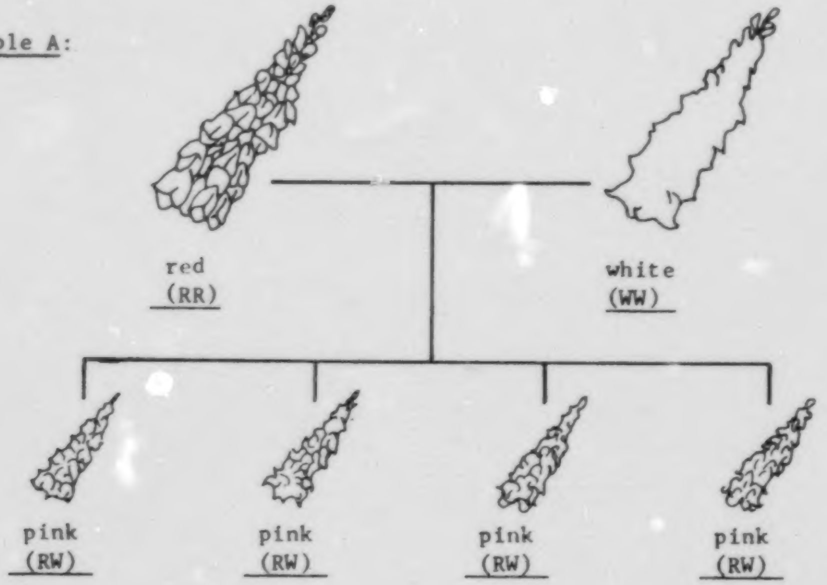
WORKSHEET ANSWERS

IV.3 Incomplete Dominance

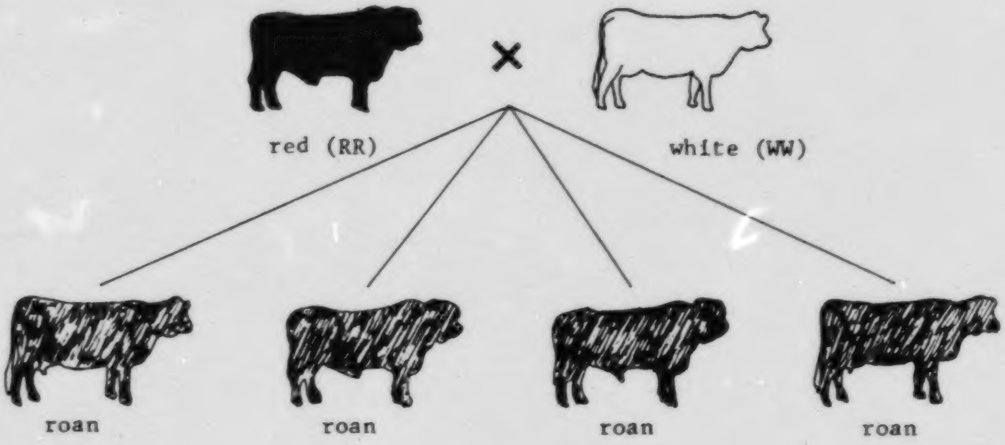
1. c) pink color
2. c) neither red nor white
3. 3. a) RR
4. c) WW
5. b) RW or WR
6. c) hybrids
7. c) roan color
8. a) RR
9. b) 100%
10. b) RW or WR
11. a) pure for white
12. b) hybrid for roan
13. RW x RW
14. 1 out of four, 25%
15. 1 out of four, 25%
16. 2 out of four, 50%
17. RR x RW
18. yes, 50% or 1/2
19. no
20. yes, 50% or 1/2
21. both bull and cow with red hair
22. both bull and cow with white hair
23. one parent with red hair and the other with white hair

TGT GAMESHEET: IV.3 Incomplete Dominance

Example A:


red
(RR)
white
(WW)
pink
(RW)
pink
(RW)
pink
(RW)
pink
(RW)

Example B:


×
red (RR)
white (WW)
roan
roan
roan
roan

TGT GAMESHEET: IV.3 Incomplete Dominance

The genotype of the offspring in example B is:

a. RR
b. RW or WR
c. WW

1

The phenotype of the offspring in example B is:

a. red color
b. pink color
c. roan color

2

The genotype of the offspring of a pure red-flowering and a pure white-flowering plant is:

a. RR
b. RW or WR
c. WW

3

The phenotype of the offspring in example A is:

a. red color
b. white color
c. pink color

4

The genotype of the bull (parent) in example B is:

a. RR
b. WW
c. RW or WR

5

The color a gardener would expect to find dominant among snapdragons is:

a. red
b. white
c. neither red nor white

6

The roan offspring in example B are:

a. pure for white
b. hybrid for roan
c. mutant for roan

7

The white cow in example B is:

a. pure for white
b. hybrid for white
c. mutant for white

8

The percentage of offspring in example B that are roan is:

a. 25%
b. 100%
c. 50%

9

The genotype of a pure white-flowering plant is:

a. RR
b. RW or WR
c. WW

10

Because the offspring have different genes for the same trait, the offspring are:

a. pure
b. prized organisms
c. hybrids

11

The genotype of a pure red-flowering plant is:

a. RR
b. RW or WR
c. WW

12

Items 13-19: Use a Punnett square to answer the questions.

PROBLEM: Andalusian (an-duh-LOO-zhuhn) chickens may be black, white or blue feathered. When a black (B) Andalusian hen is crossed with a white (W) Andalusian rooster, the offspring are blue.

How would you represent the gene combination of this cross?

_______ x _______
hen rooster

13

TGT GAMESHEET: IV.3 Incomplete Dominance

What is the genotype of the offspring?

____

14

Which phenotype represents the blending?

____

15

A blue Andalusian hen is crossed with a blue Andalusian rooster.

How would you represent the gene combination of this cross?

______ x ______

hen rooster

16

A blue Andalusian hen is crossed with a blue Andalusian rooster.

How many of the offspring will be black feathered?

________ out of four

17

A blue Andalusian hen is crossed with a blue Andalusian rooster.

How many of the offspring will be blue feathered?

________ out of four

18

A blue Andalusian hen is crossed with a blue Andalusian rooster.

How many of the offspring will be white feathered?

________ out of four

19

Items 20-26: Use a Punnett square to answer the questions.

PROBLEM: In four-o'clocks, the gene for red flowers (R) is incompletely dominant to the gene for white flowers (W). The offspring result in pink flowers. A pink and a white four-o'clock are crossed.

How would you represent the gene combination of this cross?

______ x ______

20

What is/are the phenotype(s) of the offspring?

____

21

What is/are the genotype(s) of the offspring?

____

22

Would any of the offspring be red?

____

23

Would any of the offspring be pink?

____

24

Would any of the offspring be white?

____

25

What type of cross would guarantee that all the offspring would be white?

____

26

GAMESHEET ANSWERS

IV.3 Incomplete Dominance

1. b) RW or WR
2. c) roan color
3. b) RW or WR
4. c) pink color
5. RR
6. c) neither red nor white
7. b) hybrid for roan
8. a) pure for white
9. b) 100%
10. c) WW
11. c) hybrids
12. a) RR
13. BB x WW
14. BW
15. blue feathered
16. BW x BW
17. 1 out of four
18. 2 out of four
19. 1 out of four
20. RW x WW
21. pink flowers and white flowers
22. RW and WW
23. no
24. yes, 50% or 1/2
25. yes, 50% or 1/2
26. both parents must have white flowers (WW x WW)

TGT LIFE SCIENCE

UNIT: Health

WORKSHEET: Nutrient Sources and Functions

Objective:

V.1--a. Students will be able to identify food sources of the major nutrients.

b. Students will be able to name deficiency diseases associated with vitamin deficiencies (A, B complex, D, K, C).

c. Students will be able to identify the functions of major nutrients.

d. Students will be able to name the Basic Four Food Groups.

e. Students will be able to name foods contained in each of the Basic Four Food Groups.

Instructions: This worksheet will help you prepare for the Nutrient Sources and Functions Game. Study the charts carefully. Answer each item on the worksheet.

DAILY FOOD GUIDE--THE BASIC FOUR GROUPS

Food Group	Nutrients	Daily Amounts
MILK GROUP Milk cheese, ice cream, yogurt	Calcium Protein Riboflavin	Adults: 2 or more c. Children 1 to 9 yrs.: 2 - 3 c. 9 to 12 " : 3 or more c. Teens : 4 or more c. Pregnant women : 3 or more c. Lactating women : 4 or more c.

1 c. = 8 oz.; milk equivalents: 1 oz. cheddar cheese, 1½ c. cottage cheese; ½ c. nonfat dry milk; ½ c. evaporated milk, undiluted; 1 c. ice milk; 2 c. ice cream; 1 c. fluid skim milk or buttermilk.

* *

MEAT GROUP Beef, veal, lamb, pork, poultry, fish, eggs, dry beans, dry peas, nuts, peanut butter	Protein Iron Thiamin Niacin Riboflavin	2 or more servings Count as one serving: 2 to 3 oz. lean, boneless, cooked meat, fish, or poultry, or 2 eggs or ½ c. tuna fish or 1 c. cooked dry beans or peas or 4 Tb. peanut butter

* *

VEGETABLE & FRUIT GROUP	Vitamins Minerals	4 or more servings Count as one serving: ½ c. veg. or fruit, or one medium apple, banana, orange, potato, etc., or ½ grapefruit or melon
	Vitamin A	Include: One dark-green or deep-yellow veg. or fruit rich in Vit. A at least every other day, and
	Vitamin C	A citrus fruit or other fruit or vegetable rich in Vit. C daily 4 oz. orange jc. = 1 serv.

* *

BREAD & CEREAL GROUP		4 or more servings of whole grain, enriched, or restored
	Thiamin Riboflavin Niacin Iron Protein	Count as one serving: 1 slice of bread; 1 oz. (1 c.) ready-to-eat cereal, flake or puffed varieties; ½ to 3/4 c. cooked cereal; ½ to 3/4 c. pastas (macaroni, spaghetti, or noodles) 5 saltine crackers; 2 squares graham crackers

TGT WORKSHEET: V.1 Nutrient Sources and Functions

FOOD NEEDS OF THE BODY

NUTRIENT	PURPOSE	SOURCE	LACK OF NUTRIENT
Protein	1. builds and repairs body tissue, 2. builds resistance to disease	milk, eggs, cheese, nuts, meat, peanut butter	results in: 1. lowered resistance to disease, 2. mental and physical fatigue, 3. stunted growth
Carbohydrates 1. starches 2. sugar	1. fuel food, 2. provides energy	1. starches, bread, cereal, cereal products, dried beans, 2. sugars, honey	1. underweight 2. fatigue 3. lack of energy 4. hunger
Fats	1. provides heat and energy, 2. protects vital organs	cream, butter, margarine, egg yolk, bacon, nuts, cheese	1. underweight 2. fatigue
Minerals 1. Calcium and Phosphorus	1. builds strong bones and teeth	milk, and milk dishes--cheese	bone deformation, poor teeth
2. Iron	2. aids in blood clotting, builds blood and tissue	lean meat, liver, oysters, egg yolk, whole grain bread	fatigue, nutritional anoma
3. Iodine	proper functioning of thyroid gland	seafood, iodized salt	simple goiter
Vitamins 1. A	growth, resistance to infection, helps eyes adjust to light changes	liver, butter, leafy green and yellow vegetables	rough, scaly skin, night blindness, retarded growth
2. B_1 Thiomine 3. B_2 Riboflavin	aids appetite, aids nervous system	meats, whole grain cereals, bread	headache, fatigue, nervousness, poor digestion, loss of appetite
4. C Ascorbic Acid	1. formation of bones and teeth, 2. resistance to disease	citrus fruits, tomatoes, cantaloupe, cabbage	sore and bleeding gums called scurvy, enlarged joints
5. D "Sunshine Vitamin"	builds and maintains good teeth and bones	fish, liver, milk and sunshine	poorly formed teeth and bone disease called rickets

TGT WORKSHEET: V.1 Nutrient Sources and Functions

The best sources of protein are:

milk and meat
fruits and vegetables
breads and cereals
butter and oils

1

Which source of carbohydrates supplies more of the other nutrients as well?

fruit
candy
cake

2

Which is a source of fat?

bacon
bread
vegetables

3

Which nutrient helps heal wounds and keeps gums healthy?

4

Milk and sunshine are good sources of ______________.

5

Which nutrient helps people see at night?

6

Which nutrient can be stored by the body and therefore only has to be eaten every other day?

7

Which food group is a better source of iron: milk group, or bread and cereal group?

8

Candy, which supplies only __________ (a nutrient), is not required because the body gets this nutrient from so many other foods.

fat
carbohydrate
protein
vitamin C

9

Which one of the following is a good source of vitamin C?

broccoli
milk
liver

10

Which food group is a better source of carbohydrate: fruit and vegetable group, or meat group?

11

What nutrient does Susan need to make sure that her body will get enough oxygen from the blood?

12

Which nutrient helps build strong bones and teeth?

13

What is the function of of carbohydrate in the body?

14

Which food group is a better source of protein: meat group, or fruit and vegetable group?

15

TGT WORKSHEET: V.1 Nutrient Sources and Functions

Is the bread/cereal group the best source of fats? 16	Name the only 3 nutrients in foods which supply energy (calories). 17	Which is a better source of vitamin A: apricots or head lettuce? 18
Which is a better source of vitamin C: an orange, apple or peach? 19	Which is a better source of iron: dry peas or green peas? 20	Which is a better source of calcium: milk or ice cream? 21
Which is a better source of protein: peanut butter or butter? 22	Dark, leafy green vegetables and deep yellow fruits and vegetables are usually good sources of which vitamin? 23	We get vitamin E into our diets by including these foods in our diet: fats and oils potatoes and corn spinach and kale olives and pimentos 24
____________ is the mineral needed especially by women during their menstruating years. 25	What is the BEST source of iron? 26	If Jimmy omits foods from the fruit and vegetable group, name 2 vitamins which may be missing from his diet. 27
Another name for vitamin B_2 is ______________. 28	Which nutrient supplies energy and helps build and repair body tissues? 29	Which food would supply more energy (calories) to the body: 1 oz. of a food containing only carbohydrate (such as jelly), or 1 oz. of a food containing only fat (such as butter)? 30

TGT WORKSHEET: V.1 Nutrient Sources and Functions

The bread and cereal groups contain the following foods:

peas, corn, and tomatoes
eggs, cheese and fish
peanuts, soup and candy
crackers, corn flakes and whole wheat bread

31

Vegetables and fruits are one of the ____________ Food Groups.

32

The meat group contains:

milk and ice cream
cheese and mayonnaise
fish and poultry
potatoes and squash

33

Ice cream and yogurt fit into the ____________ group.

34

______________ is the science that deals with food and how it interacts with the body.

35

An egg is a good source of ______________.

36

Another name for vitamin B_1 is ______________.

37

The amount of ____________ an individual needs each day is related to his age, height, and physical activity.

38

Another name for vitamin C is ______________.

39

Which of the following groups of foods is a good source of vitamin C?

grapes, prunes and raisins
bananas, cherries and figs
strawberries, cantalopes and oranges
tomatoes, corn and beans

40

Vitamin _____ is needed for proper clotting of your blood, which prevents you from bleeding to death if injured seriously.

41

A diet deficient in vitamin D will cause ____________.

42

____________ is needed daily, regulates the body temperature, but supplies no protein, carbohydrate, or fat to the body.

43

A lack of vitamin C results in ____________.

44

The two minerals that are needed for strong, healthy teeth are:

calcium and phosphorus
thiamin and niacin
calcium and copper
iron and magnesium

45

WORKSHEET ANSWERS

V.1 Nutrient Sources and Functions

1. milk and meat
2. fruit
3. bacon
4. vitamin C
5. vitamin D
6. vitamin A
7. vitamin A
8. bread and cereal group
9. carbohydrate
10. broccoli
11. fruit and vegetable group
12. iron
13. calcium
14. supplies energy (calories)
15. meat group
16. no
17. protein, carbohydrate and fat
18. apricots
19. orange
20. dry peas
21. milk
22. peanut butter
23. vitamin A
24. fats and oils
25. iron
26. liver
27. vitamin A and vitamin C
28. riboflavin
29. protein
30. butter (contains fat)
31. crackers, cornflakes, whole wheat bread
32. Basic Four
33. fish and poultry
34. milk
35. Nutrition
36. protein
37. thiamin
38. calories
39. ascorbic acid
40. strawberries, cantalopes and oranges
41. K
42. rickets
43. water
44. scurvy
45. calcium and phosphorus

TGT GAMESHEET: V.1 Nutrient Sources and Functions

The best sources of protein are:

milk and meat
fruit and vegetables
breads and cereals
butter and oils

1

Which nutrient helps heal wounds and keeps gums healthy?

2

The meat group contains:

milk and ice cream
cheese and mayonnaise
fish and poultry
potatoes and squash

3

Which one of the following is a good source of vitamin C?

broccoli
milk
liver

4

____________ is the science that deals with food and how it interacts with the body.

5

Which source of carbohydrate supplies the most other nutrients as well?

fruit
candy
cake

6

Food is a source of ____________ for our body.

7

Which food group is a better source of iron: milk group, or bread and cereal group?

8

Which food group is a better source of carbohydrate: fruit and vegetable group, or meat group?

9

What is the function of carbohydrate in the body?

10

The "sunshine vitamin" is vitamin _____.

11

A diet deficient in vitamin D will cause ____________.

12

____________ is needed daily, regulates the body temperature, but supplies no protein, carbohydrate, or fat to the body.

13

What nutrient does Susan need to make sure that her body will get enough oxygen from the blood?

14

The two minerals that are needed for strong, healthy teeth are:

calcium and phosphorus
thiamin and niacin
calcium and copper
iron and magnesium

15

TGT GAMESHEET: V.1 Nutrient Sources and Functions

Which of the following groups of foods is a good source of vitamin C?

grapes, prunes and raisins
bananas, cherries and figs
strawberries, cantalopes and oranges
tomatoes, corn and beans

16

Vitamin _____ is needed for proper clotting of your blood, which prevents you from bleeding to death if injured seriously.

17

_______ ___________ is a result of vitamin A deficiency.

18

Vitamin A is found in which group of foods?

yellow squash, carrots, sweet potatoes
corn, bean sprouts, lettuce
string beans, peas, broccoli
kidney beans, potatoes, tomatoes

19

Starches and sugars are ____________.

20

This mineral aids in proper functioning of a thyroid gland:

magnesium
iodine
zinc
iron

21

Which nutrient can be stored by the body and therefore only has to be eaten every other day?

22

Dark, leafy green vegetables and deep yellow fruits and vegetables are usually good sources of which vitamin?

23

What is the BEST source of iron?

24

Which nutrient supplies energy and helps build and repair body tissues?

25

Candy, which supplies only __________ (a nutrient), is not required because the body gets this nutrient from so many other foods.

fat
carbohydrate
protein
vitamin C

26

Name the only 3 nutrients in foods which supply energy (calories).

27

Another name for vitamin B_2 is ____________.

28

If Jimmy omits foods from the fruit and vegetable group, name 2 vitamins which may be missing from his diet.

29

Which food would supply more energy (calories) to the body: 1 oz. of a food containing only carbohydrate (such as jelly), or 1 oz. of a food containing only fat (such as butter)?

30

GAMESHEET ANSWERS

V.1 Nutrient Sources and Functions

1. milk and meat
2. vitamin C
3. fish and poultry
4. broccoli
5. Nutrition
6. fruit
7. energy
8. bread and cereal
9. fruit and vegetables
10. supplies energy
11. D
12. rickets
13. water
14. iron
15. calcium and phosphorus
16. strawberries, cantalopes and oranges
17. K
18. Night blindness
19. yellow squash, carrots, sweet potatoes
20. carbohydrates
21. iodine
22. vitamin A
23. vitamin A
24. liver
25. protein
26. carbohydrate
27. protein, carbohydrate and fats
28. riboflavin
29. vitamin A and vitamin C
30. butter (contains fat)

TGT LIFE SCIENCE

UNIT: Health

WORKSHEET: Infectious Diseases

Objective: V.2.1.--Students will state the microorganisms that cause infectious diseases and the ways in which these diseases spread to humans.

Instructions: This worksheet will help you prepare for the Infectious Diseases Game. Study the Infectious Diseases chart. For each item on the worksheet, choose the microorganism which causes the disease from column A below and choose the way(s) in which the disease spreads from column B below.

Vocabulary:

contamination
direct contact
droplets
indirect contact
infectious diseases
microorganism
puncture wound

A

bacteria
fungus
protozoa
rickettsia
virus

B

animal carrier (animal bites)
contact (direct, indirect)
contaminated food and drink
droplets
puncture

TGT WORKSHEET: V.2.1 Infectious Diseases

INFECTIOUS DISEASES

Disease	Cause	How Spread	Preventive Measures	Helpful Measures
Amoebic dysentery	One-celled animal	Polluted water; contact with carrier or infected person	Avoid infected person; control of carriers; good community sanitation	Antibiotics
Athlete's foot	Fungus	Direct and indirect contact	Avoid infected person; personal cleanliness; wear shoes in public places	Keep skin dry; antifungal (against fungus) drugs
Common cold	Virus	Droplets; contact	Avoid infected person	Rest
Hepatitis	Virus	Droplets; contact; infected food, water, and hypodermic needles	Avoid infected person; good personal and community sanitation; sterilization of hypodermic needles	Rest; special diet
Malaria	One-celled animal	Bite of infected female anopheles mosquito	Control of mosquitoes by spraying, screening, draining swamps	Atabrine; chloroquine; quinine
Measles	Virus	Droplets; contact	Measles vaccine; avoid infected person	Measles antibody (from blood of recovered patients)
Pneumonia	Bacterium	Droplet infection, especially when fatigued and body resistance is low	Avoid infected person	Sulfa drugs; antibiotics
Poliomyelitis (also called polio or infantile paralysis)	Virus	Contact with carrier or polio victim	Salk vaccine (dead virus); Sabin vaccine (weakened virus)	Polio antibody (from blood of recovered patients); rest; hot packs
Rabies (or hydrophobia)	Virus	Bite of infected animal or sometimes contact with infected animal	Avoid wild animals such as squirrels, bats, and foxes; immunize pets; Pasteur's anti-rabies vaccine	If bitten by animal with rabies, use anti-rabies vaccine
Ringworm	Fungus	Direct and indirect contact	Avoid infected person; personal cleanliness	Keeping skin dry; antifungal drugs

Infectious Diseases (con't.)

Disease	Cause	How Spread	Preventive Measures	Helpful Measures
Rocky Mountain spotted fever	Rickettsia	Bite of infected tick	Spotted-fever vaccine; avoid tick infested regions	Antibiotics
Smallpox	Virus	Contact	Smallpox vaccine	Rest; nursing care
Tapeworm	Flatworm	Eating insufficiently cooked infected meat	Meat inspection; thorough cooking	Antihelminthic drugs
Tetanus (or lockjaw)	Bacterium	Puncture wounds; cuts that close at their surface	Tetanus toxoid; prompt first aid and medical treatment of deep wounds	Tetanus antitoxin
Tuberculosis	Bacterium	Droplets; close contact; infected food	Tuberculosis vaccine; avoid infected person; patch test to detect susceptibility; X-rays to detect early cases	Antibiotics and isoniazid; collapse of lung; rest, nursing care
Typhoid fever	Bacterium	Polluted water and food; flies; contact with carrier or infected person	Typhoid vaccine; good personal and community sanitation; water purification; fly control; avoid infected person; control of carriers	Antibiotics

TGT WORKSHEET: V.2.1 Infectious Diseases

Instructions:

Choose the correct answer from Column A for the cause of the disease. Choose the correct answer(s) from Column B for how the disease spreads.

A

- bacteria
- fungus
- protozoa
- rickettsia
- virus

B

- animal carrier (animal bites)
- contact (direct, indirect)
- contaminated food and drink
- droplets
- puncture

sore throat A. B. 1	polio A. B. 2	mumps A. B. 3
common cold A. B. 4	tetanus (lockjaw) A. B. 5	measles A. B. 6
gonorrhea A. B. 7	rabies A. B. 8	dysentery A. B. 9
ringworm A. B. 10	influenza (flu) A. B. 11	hepatitis A. B. 12
tuberculosis (TB) A. B. 13	athlete's foot A. B. 14	malaria A. B. 15
Rocky Mountain spotted fever A. B. 16	typhoid fever A. B. 17	smallpox A. B. 18

WORKSHEET ANSWERS

V.2.1 Infectious Diseases

1. A. bacteria
   B. droplets, contact
2. A. virus
   B. contact
3. A. virus
   B. droplets, contact
4. A. virus
   B. droplets, contact
5. A. bacteria
   B. puncture
6. A. virus
   B. droplets, contact
7. A. bacteria
   B. direct contact
8. A. virus
   B. animal bites
9. A. virus, amoeba
   B. contaminated food, drink
10. A. fungus
    B. contact (direct, indirect)
11. A. virus
    B. droplets, contact
12. A. virus
    B. droplets, contact, contaminated food and drink
13. A. bacteria
    B. droplets, contact
14. A. fungus
    B. contact
15. A. protozoa
    B. animal carrier (mosquito bite)
16. A. rickettsia
    B. animal carrier (tick bite)
17. A. bacteria
    B. contaminated food and drink, direct contact
18. A. virus
    B. contact

TGT GAMESHEET: V.2.1 Infectious Diseases

Instructions:

Choose the correct answer from Column A for the cause of the disease. Choose the correct answer(s) from Column B for how the disease spreads.

A	B
bacteria	animal carrier (animal bites)
fungus	contact (direct, indirect)
protozoa	contaminated food and drink
rickettsia	droplets
virus	puncture

small pox A. B. 1	common cold A. B. 2	gonorrhea A. B. 3
ringworm A. B. 4	tuberculosis (TB) A. B. 5	Rocky Mountain spotted fever A. B. 6
polio A. B. 7	tetanus (lockjaw) A. B. 8	rabies A. B. 9
influenza (flu) A. B. 10	athelete's foot A. B. 11	typhoid fever A. B. 12
mumps A. B. 13	measles A. B. 14	dysentery A. B. 15
hepatitis A. B. 16	malaria A. B. 17	sore throat A. B. 18

GAMESHEET ANSWERS

V.2.1 Infectious Diseases

1. A. virus
   B. contact
2. A. virus
   B. droplets, contact
3. A. bacteria
   B. direct contact
4. A. fungus
   B. contact (direct, indirect)
5. A. bacteria
   B. droplets, contact
6. A. rickettsia
   B. animal carrier (tick bite)
7. A. virus
   B. contact
8. A. bacteria
   B. puncture
9. A. virus
   B. animal bites
10. A. virus
    B. droplets, contact
11. A. fungus
    B. contact
12. A. bacteria
    B. contaminated food or drink, direct contact
13. A. virus
    B. droplets, contact
14. A. virus
    B. droplets, contact
15. A. virus, amoeba
    B. contaminated food or drink
16. A. virus
    B. contaminated food or drink
17. A. protozoa
    B. animal carrier (mosquito bite)
18. A. bacteria
    B. droplets

TGT LIFE SCIENCE

UNIT: Health

WORKSHEET: Noninfectious Diseases

Objective: V.2.2--Students will classify various types of noninfectious diseases.

Instructions: This worksheet will help you prepare for the Noninfectious Diseases Game. Study the descriptions of the types of diseases. For each item, match the type of noninfectious disease with the disease or disorder on the worksheet. Some items have more than one answer.

Vocabulary:

organic disease - a disease resulting from the structural disorder of an organ.

glandular disease - a disease resulting from the undersecretion or oversecretion of endocrine glands.

functional disease - a disease resulting from the improper functioning of an organ.

deficiency disease - a disease resulting from a lack of a certain food nutrient in the body.

hereditary disease - a disease resulting from the inheritance of an abnormal gene.

allergy - a sensitive reaction to a foreign particle.

TGT WORKSHEET: V.2.2 Noninfectious Diseases

heart attack 1	rickets 2	arthritis 3
appendicitis 4	hemophilia 5	muscular dystrophy 6
scurvy 7	glaucoma 8	pellagra 9
high blood pressure (hypertension) 10	emphysema 11	diabetes 12
cirrhosis of the liver 13	beriberi 14	sickle cell anemia 15
anemia 16	hay fever 17	bronchitis 18
ulcers 19	leukemia 20	multiple sclerosis 21
cerebral hemorrhage (stroke) 22	cancer 23	arteriosclerosis (hardening of the arteries) 24
pyorrhea 25	goiter 26	

WORKSHEET ANSWERS

V.2.2 Noninfectious Diseases

1. organic disease, functional disease
2. deficiency disease
3. organic disease, functional disease
4. organic disease
5. hereditary disease
6. organic disease
7. deficiency disease
8. organic disease
9. deficiency disease
10. functional disease
11. organic disease
12. glandular disease
13. organic disease
14. deficiency disease
15. hereditary disease
16. functional disease, deficiency disease
17. allergy
18. functional disease
19. organic disease, functional disease
20. organic disease
21. organic disease
22. functional disease
23. organic disease, functional disease
24. functional disease
25. organic disease
26. glandular disease, deficiency disease

TGT GAMESHEET: V.2.2 Noninfectious Diseases

Instructions:

Tell what type of noninfectious disease each item is. Some items have more than one answer.

Types of Noninfectious Diseases

organic
glandular
functional
deficiency
hereditary
allergy

asthma 1	pyorrhea 2	arteriosclerosis (hardening of the arteries) 3
cancer 4	cerebral hemorrhage (stroke) 5	multiple sclerosis 6
leukemia 7	ulcers 8	bronchitis 9
hay fever 10	anemia 11	sickle cell anemia 12
beriberi 13	cirrhosis of the liver 14	diabetes 15
emphysema 16	high blood pressure (hypertension) 17	pellagra 18
glaucoma 19	scurvy 20	muscular dystrophy 21
hemophilia 22	appendicitis 23	arthritis 24
rickets 25	heart attack 26	cataract 27

GAMESHEET ANSWERS

V.2.2 Noninfectious Diseases

1. allergy, functional disease
2. organic disease
3. functional disease
4. organic disease, functional disease
5. functional disease
6. organic disease
7. organic disease
8. organic disease, functional disease
9. functional disease
10. allergy
11. functional disease, deficiency disease
12. hereditary disease
13. deficiency disease
14. organic disease
15. glandular disease
16. organic disease
17. functional disease
18. deficiency disease
19. organic disease
20. deficiency disease
21. organic disease
22. hereditary disease
23. organic disease
24. organic disease, functional disease
25. deficiency disease
26. organic disease, functional disease
27. organic disease

TGT LIFE SCIENCE
UNIT: Ecology
WORKSHEET: Community Relationships

Objective: VI.1.1--a. Students will define vocabulary terms associated with the relationships in a natural community and a natural ecosystem.

b. Students will identify and give examples of various relationships within a natural community and a natural ecosystem.

c. Students will identify and give examples of various factors which control populations and communities in an ecosystem.

Instructions: This worksheet will help you prepare for the Community Relationships Game. Define each vocabulary word below before you begin the worksheet. Then read each item and choose the correct answer.

Vocabulary:

abiotic factors (temperature, moisture, sunlight and soil)
biosphere
biotic factors
community
density
ecology
ecosystem
habitat
population
pest

TGT WORKSHEET: VI.1.1 Community Relationships

A group of one specie living in a certain area is a:

a. niche
b. habitat
c. community
d. population

1

The interaction of living things and their environment is:

a. a biosphere
b. ecology
c. biology
d. an ecosystem

2

A community and its physical environment is a(n):

a. ecosystem
b. ecosphere
c. biosphere
d. niche

3

All the living things that live in a certain area are called a:

a. habitat
b. community
c. niche
d. population

4

A community of ALL living things interacting is called a(n):

a. ecology
b. ecosystem
c. biosphere
d. ecosphere

5

The non-living materials and energy in the ecosystem are:

a. biotic factors
b. abiotic factors
c. organic factors
d. niches

6

A population's total way of life is called a:

a. biosphere
b. habitat
c. niche
d. community

7

The living organisms in an ecosystem are:

a. biotic factors
b. abiotic factors
c. inorganic factors
d. niches

8

Air, soil and water are:

a. abiotic factors
b. biotic factors
c. organic factors
d. niches

9

All the dandelions in a lawn make up a:

a. habitat
b. community
c. niche
d. population

10

The living things in a cornfield are called a:

a. habitat
b. community
c. niche
d. population

11

The trees and bushes that birds live in are examples of:

a. habitats
b. communities
c. niches
d. populations

12

The biotic part of an ecosystem includes:

a. air, fish, humans
b. water, sunfish, trout
c. raccoon, sunfish, plants
d. plants, water, raccoon

13

The plants growing on a rock make up a:

a. habitat
b. niche
c. population
d. community

14

All the bass in a lake are examples of a:

a. population
b. niche
c. community
d. habitat

15

TGT WORKSHEET: VI.1.1 Community Relationships

An earthworm's niche is:

a. carnivore
b. omnivore
c. herbivore
d. producer

16

A plant or animal whose population is so large that it is a nuisance to people is a:

a. host
b. pest
c. specie
d. parasite

17

Which of the following does not make a population unstable?

a. food supply
b. birth rate
c. natural enemies
d. habitat

18

Populations increase by:

a. death and immigration
b. death and emigration
c. birth and emigration
d. birth and immigration

19

Populations decrease by:

a. diseases
b. food shortages
c. predators
d. all of the above

20

Which of the following is not an ecological niche?

a. producer
b. carnivore
c. habitat
d. decomposer

21

Which of the following is not a member of a pond community?

a. sunfish
b. cattail
c. frog
d. bear

22

Soil, a rotten log, and the bank of a stream are examples of:

a. communities
b. habitats
c. niches
d. populations

23

The number of organisms found in a certain area at a given time is called:

a. species
b. density
c. pest
d. habitat

24

A fresh water lake is an example of a(n):

a. population
b. community
c. ecosystem
d. niche

25

The "address" of an organism is its:

a. habitat
b. community
c. niche
d. population

26

The "occupation" of an organism is its:

a. habitat
b. community
c. niche
d. population

27

The cockroaches in a house are an example of a(n):

a. population
b. community
c. niche
d. ecosystem

28

WORKSHEET ANSWERS

VI.1.1 Community Relationships

1. (d) population
2. (b) ecology
3. (a) ecosystem
4. (b) community
5. (c) biosphere
6. (b) abiotic factors
7. (c) niche
8. (a) biotic factors
9. (a) abiotic factors
10. (d) population
11. (b) community
12. (a) habitat
13. (c) raccoon, sunfish, plants
14. (d) community
15. (a) population
16. (c) herbivore
17. (b) pest
18. (d) habitat
19. (d) birth and immigration
20. (d) all of the above
21. (c) habitat
22. (d) bear
23. (b) habitats
24. (b) density
25. (c) ecosystem
26. (a) habitat
27. (c) niche
28. (a) population

TGT GAMESHEET: VI.1.1 Community Relationships

A group of one specie living in a certain area is a:

a. niche
b. habitat
c. community
d. population

1

All the living things that live in a certain area are called a:

a. habitat
b. community
c. niche
d. population

2

A population's total way of life is called a:

a. biosphere
b habitat
c. niche
d. community

3

All the dandelions in a lawn make up a:

a. habitat
b. community
c. niche
d. population

4

A fresh water lake is an example of a(n):

a. population
b. community
c. ecosystem
d. niche

5

An earthworm's niche is:

a. carnivore
b. omnivore
c. herbivore
d. producer

6

The interaction of living things and their environment is:

a. a biosphere
b. ecology
c. biology
d. an ecosystem

7

A community of ALL living things is called a(n):

a. ecology
b. ecosystem
c. biosphere
d. ecosphere

8

The living organisms in an ecosystem are:

a. biotic factors
b. abiotic factors
c. inorganic factors
d. niches

9

The living things in a cornfield are called a:

a. habitat
b. community
c. niche
d. population

10

The plants growing on a rock make up a:

a. habitat
b. niche
c. population
d. community

11

A plant or animal whose population is so large that it is a nuisance to people is a:

a. host
b. pest
c. specie
d. parasite

12

A community and its physical environment is a(n):

a. ecosystem
b. ecosphere
c. biosphere
d. niche

13

The non-living materials and energy in the ecosystem are:

a. biotic factors
b. abiotic factors
c. organic factors
d. niches

14

Air, soil and water are:

a. abiotic factors
b. biotic factors
c. organic factors
d. niches

15

TGT GAMESHEET: VI.1.1 Community Relationships

The trees and bushes that birds live in are examples of:

a. habitats
b. communities
c. niches
d. populations

16

All the bass in a lake are examples of a:

a. population
b. niche
c. community
d. habitat

17

Which of the following does not make a population unstable?

a. food supply
b. birth rate
c. natural enemies
d. habitat

18

Populations increase by:

a. death and immigration
b. death and emigration
c. birth and emigration
d. birth and immigration

19

Which of the following is not a member of a pond community?

a. sunfish
b. cattail
c. frog
d. bear

20

Populations decrease by:

a. disease
b. food shortages
c. predators
d. all of the above

21

Soil, a rotten log, and the bank of a stream are examples of:

a. communities
b. habitats
c. niches
d. populations

22

Which of the following is not an ecological niche?

a. producer
b. carnivore
c. habitat
d. decomposer

23

The number of organisms found in a certain area at a given time is called:

a. species
b. density
c. pest
d. habitat

24

The cockroaches in a house are examples of a(n):

a. population
b. community
c. niche
d. ecosystem

25

The biotic part of an ecosystem includes:

a. air, fish, humans
b. water, sunfish, trout
c. raccoon, sunfish, plants
d. plants, water, raccoon

26

The "occupation" of an organism is its:

a. habitat
b. community
c. niche
d. population

27

GAMESHEET ANSWERS

VI.1.1 Community Relationships

1. (d) population
2. (b) community
3. (c) niche
4. (d) population
5. (c) ecosystem
6. (c) herbivore
7. (b) ecology
8. (c) biosphere
9. (a) biotic factors
10. (b) community
11. (d) community
12. (b) pest
13. (a) ecosystem
14. (b) abiotic factors
15. (a) abiotic factors
16. (a) habitats
17. (a) population
18. (d) habitat
19. (d) birth and immigration
20. (d) bear
21. (d) all of the above
22. (b) habitats
23. (c) habitat
24. (b) density
25. (a) population
26. (c) raccoon, sunfish, plants
27. (c) niche

TGT LIFE SCIENCE

UNIT: Ecology

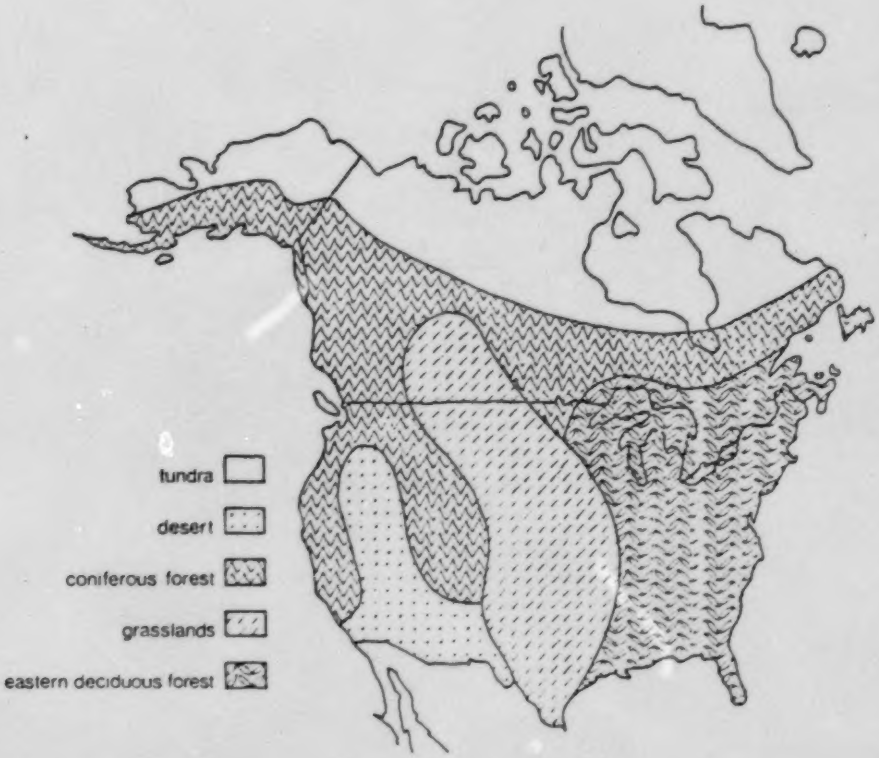
WORKSHEET: Communities: Biomes of North America

Objective: VI.1.2--Students will identify the conditions and organisms which can be found in certain biomes.

Instructions: This worksheet will help you prepare for the Communities: Biomes of North America Game. Study the map and the vocabulary terms carefully. For items 1-15, choose the biome which fits the description. For items 16-30, choose the biome where the organisms are found. The five biomes are: tundra, eastern deciduous forest, desert, coniferous forest, grasslands.

Vocabulary:

biome
coniferous forest
deciduous forest
desert
grasslands
hibernation
nocturnal
taiga
tundra



TGT WORKSHEET: VI.1.2 Communities: Biomes of North America

Has a wide temperature range but very low rainfall. 1	Has low temperatures and low rainfall. 2	Has a temperate climate and moderate rainfall. 3
Has cool temperatures and light rainfall. 4	Has a temperate climate and low rainfall. 5	Always has a frozen layer of ground. 6
Most of the animals are nocturnal. 7	Its trees shed their leaves each autumn. 8	It is also called the taiga. 9
Provides excellent natural conditions for grazing and farming. 10	Its climax community is the beech-maple or oak-hickory. 11	Many animals hibernate or have long sleeps during the winter. 12
It is the largest biome. 13	Its growing season lasts about 60 days. 14	Its climax community may be spruces, pines or firs. 15
All organisms have adaptations for obtaining and conserving water and for withstanding extreme temperatures. 16	Its insects and birds migrate. 17	Its main producers are sagebrush, cacti and the yucca plant. 18
Its main carnivores are snakes, hawks, owls, coyotes and cougars. 19	Its herbivores are the caribou, muskox, lemmings, hares and ground squirrels. 20	Its main producers are mosses, lichens, sedge and herbs. 21
Its first level consumers are the moose, elk, hare, and caribou. 22	Its main producers are the spruce, fir, aspen, pine and ferns. 23	Its second and third level consumers are polar bears, Kodiak grizzly bears, wolves and foxes. 24
Its first level consumers are deer, beavers, rabbits and squirrels. 25	Its carnivores are wolves, mountain lions, black bears, lynxes, foxes and weasels. 26	Its first level consumers are bison, prairie dogs, gophers and ground squirrels. 27
Its herbivores are Kangaroo rats and jack rabbits. 28	Its second and third level consumers are lizards, snakes, badgers, coyotes and cougars. 29	Some of its producers are the beech, maple, oak, hickory and ash trees. 30

WORKSHEET ANSWERS

VI.1.2 Communities: Biomes of North America

1. desert
2. tundra
3. deciduous forest
4. coniferous forest
5. grasslands
6. tundra
7. desert
8. deciduous forest
9. coniferous forest
10. grasslands
11. deciduous forest
12. deciduous forest
13. coniferous forest
14. tundra
15. coniferous forest
16. desert
17. all biomes
18. desert
19. grasslands
20. coniferous forest
21. tundra
22. coniferous forest
23. coniferous forest
24. tundra
25. deciduous forest
26. coniferous forest
27. grasslands
28. desert
29. desert
30. deciduous forest

TGT GAMESHEET: VI.1.2 Communities: Biomes of North America

Its main producers are the spruce, fir, aspen, pine and ferns. 1	Its trees shed their leaves each autumn. 2	Has a wide temperature range but very low rainfall. 3
Its carnivores are wolves, mountain lions, black bears, lynxes, foxes and weasels. 4	Its climax community is the beech-maple or oak-hickory. 5	Has cool temperatures and light rainfall. 6
Its second and third level consumers are lizards, snakes, badgers, coyotes and cougars. 7	Its growing season lasts about 60 days. 8	Its insects and birds migrate. 9
Has a temperate climate and moderate rainfall. 10	Its first level consumers are the moose, elk, hare and caribou. 11	Its herbivores are the caribou, muskox, lemming, hare and ground squirrel. 12
Always has a frozen layer of ground. 13	Its first level consumers are deer, beavers, squirrels and rabbits. 14	Has low temperatures and low rainfall. 15
It is also called the taiga. 16	Its herbivores are kangaroo rats and jack rabbits. 17	Has a temperate climate and low rainfall. 18
Many animals hibernate or have long sleeps during the winter. 19	Its second and third level consumers are polar bears, Kodiak grizzly bears, wolves and foxes. 20	Its main producers are sagebrush, cacti and the yucca plant. 21
Its climax community may be spruces, pines or firs. 22	Its first level consumers are bison, prairie dogs, gophers and ground squirrels. 23	Its main producers are mosses, lichens, sedge and herbs. 24
Provides excellent natural conditions for grazing and farming. 25	Some of its producers are the beech, maple, oak, hickory and ash trees. 26	All organisms have adaptations for obtaining and conserving water and for withstanding extreme temperatures. 27
It is the largest biome. 28	Most of the animals are nocturnal. 29	Its main carnivores are snakes, hawks, owls, coyotes and cougars. 30

GAMESHEET ANSWERS

VI.1.2 Communities: Biomes of North America

1. coniferous forest
2. deciduous forest
3. desert
4. coniferous forest
5. deciduous forest
6. coniferous forest
7. desert
8. tundra
9. all biomes
10. deciduous forest
11. coniferous forest
12. coniferous forest
13. tundra
14. deciduous forest
15. tundra
16. coniferous forest
17. desert
18. grasslands
19. deciduous forest
20. tundra
21. desert
22. coniferous forest
23. grasslands
24. tundra
25. grasslands
26. deciduous forest
27. desert
28. coniferous forest
29. desert
30. grasslands

TGT LIFE SCIENCE

UNIT: Ecology

WORKSHEET: Food Webs

Objective: VI.2.1--a. Students will define producers, consumers, decomposers, food chains and food webs.

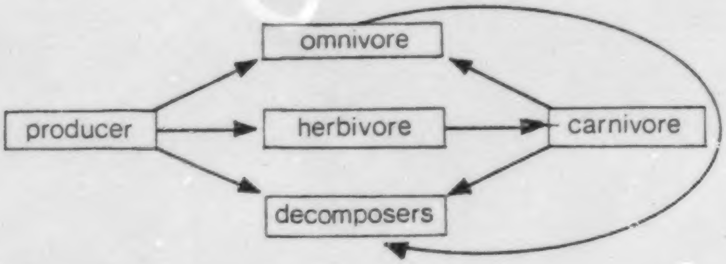
b. Students will distinguish among first-order, second-order, and third-order consumers and producers.

Instructions: This worksheet will help you prepare for the Food Web Game. After defining the vocabulary and studying the diagram, read each item and choose the correct answer.

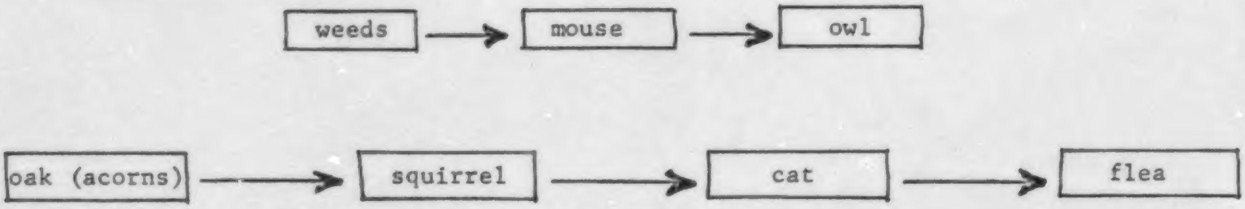
Vocabulary:

- biosphere
- carnivore
- consumer
  - first-order consumer
  - second-order consumer
  - third-order consumer
- decomposer
- food chain
- food web
- herbivore
- omnivore
- producer
- scavenger

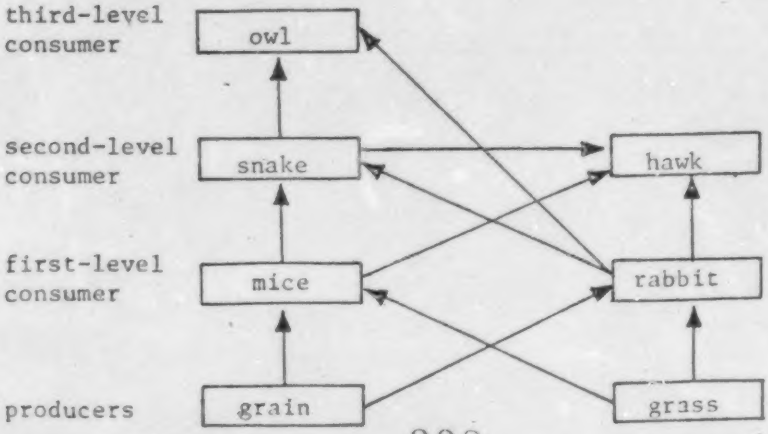
Levels in a Food Chain


omnivore
producer
herbivore
carnivore
decomposers

Examples of Food Chains


weeds
mouse
owl
oak (acorns)
squirrel
cat
flea

Feeding Patterns in a Food Web


third-level consumer
owl
second-level consumer
snake
hawk
first-level consumer
mice
rabbit
producers
grain
grass

TGT WORKSHEET: VI.2.1 Food Webs

Green plants are:

a. producers
b. consumers
c. decomposers

1

Animals are:

a. producers
b. consumers
c. decomposers

2

They convert sun's energy to food.

a. producers
b. consumers
c. decomposers

3

They rid the biosphere of dead producers and consumers.

a. producers
b. consumers
c. decomposers

4

They feed on producers.

a. producers
b. consumers
c. decomposers

5

They give off O_2.

a. producers
b. consumers
c. decomposers

6

They release basic chemicals used by producers.

a. producers
b. consumers
c. decomposers

7

Bacteria are:

a. producers
b. consumers
c. decomposers

8

Grass is a:

a. producer
b. consumer
c. decomposer

9

A tree is a:

a. producer
b. consumer
c. decomposer

10

A grasshopper is a:

a. producer
b. consumer
c. decomposer

11

They contain chlorophyll.

a. producers
b. consumers
c. decomposers

12

Mushrooms are:

a. producers
b. consumers
c. decomposers

13

CO_2 and nitrates are released by:

a. producers
b. consumers
c. decomposers

14

CO_2 and nitrates are used by:

a. producers
b. consumers
c. decomposers

15

TGT WORKSHEET: VI.2.1 Food Webs

Scavengers assist ________ by feeding on dead animals.

a. producers
b. consumers
c. decomposers

16

Vultures are:

a. consumers
b. scavengers
c. decomposers

17

An animal that eats plants only is a:

a. first-order consumer
b. second-order consumer
c. third-order consumer

18

An animal that feeds on an animal that eats plants only is a:

a. third-order consumer
b. first-order consumer
c. second-order consumer

19

An animal that feeds on an animal that feeds on an animal that eats plants only is a:

a. second-order consumer
b. third-order consumer
c. first-order consumer

20

A cow is a:

a. third-order consumer
b. first-order consumer
c. second-order consumer

21

An eagle is a:

a. producer
b. first-order consumer
c. third-order consumer

22

A mouse is a:

a. producer
b. first-order consumer
c. third-order consumer

23

A series of animals feeding on other animals or plants:

a. food web
b. food chain
c. food nutrient

24

Which is not a possible food chain?

a. man-woman-fish
b. wood-termite-anteater
c. acorn-mouse-snake

25

Which is the correct order of a food chain?

a. mountain lion-deer-tree
b. tree-deer-mountain lion
c. deer-tree-mountain lion

26

Which organism is at the top of this food chain: lettuce-rabbit-snake-hawk?

a. hawk
b. lettuce
c. snake

27

There would be more food available at the:

a. middle of the chain
b. beginning of the chain
c. end of the chain

28

All the possible feeding relationships make up a:

a. food chain
b. food web
c. nutrient

29

From the food web diagram, how many food chains are there?

a. one
b. two
c. more than two

30

TGT WORKSHEET: VI.2.1 Food Webs

From the food web diagram, name three animals that eat mice.

a. rabbit, owl, hawk
b. owl, snake, hawk
c. rabbit, fox, hawk

31

Which must be present for an ecosystem to survive?

a. producers only
b. producers and decomposers
c. carnivores only

32

A consumer that eats both plants and animals is a(n):

a. carnivore
b. herbivore
c. omnivore

33

A consumer that eats plants only is a(n):

a. carnivore
b. herbivore
c. omnivore

34

A consumer that eats animals only is a(n):

a. carnivore
b. herbivore
c. omnivore

35

Human beings are:

a. carnivores
b. herbivores
c. omnivores

36

WORKSHEET ANSWERS

VI.2.1 Food Webs

1. a) producers
2. b) consumers
3. a) producers
4. c) decomposers
5. b) consumers
6. a) producers
7. b) consumers; and
   c) decomposers
8. c) decomposers
9. a) producer
10. a) producer
11. b) consumer
12. a) producers
13. c) decomposers
14. b) consumers
15. a) producers
16. c) decomposers
17. b) scavengers
18. a) first-order consumer
19. c) second-order consumer
20. b) third-order consumer
21. b) first-order consumer
22. c) third-order consumer
23. b) first-order consumer
24. b) food chain
25. a) man-woman-fish
26. b) tree-deer-mountain lion
27. a) hawk
28. b) beginning of the chain
29. b) food web
30. c) more than two
31. b) owl, snake, hawk
32. b) producers and decomposers
33. c) omnivore
34. b) herbivore
35. a) carnivore
36. c) omnivores

TGT GAMESHEET: VI.2.1 Food Webs

An animal that feeds on an animal that eats plants only is a:

a. third-order consumer
b. first-order consumer
c. second-order consumer

1

An animal that feeds on an animal that feeds on an animal that eats plants only is a:

a. second-order consumer
b. third-order consumer
c. first-order consumer

2

An owl is a:

a. producer
b. first-order consumer
c. third-order consumer

3

A rabbit is a:

a. producer
b. first-order consumer
c. third-order consumer

4

A series of animals feeding on other animals or plants.

a. food web
b. food chain
c. food nutrient

5

Which is not a possible food chain?

a. man-woman-fish
b. cat-squirrel-acorn
c. acorn-squirrel-cat

6

Which is the correct order of a food chain?

a. mountain lion-deer-tree
b. tree-deer-mountain lion
c. deer-tree-mountain lion

7

Which organism is at the top of this food chain: lettuce-rabbit-snake-hawk?

a. hawk
b. lettuce
c. snake

8

Green plants are:

a. producers
b. consumers
c. decomposers

9

Animals are:

a. producers
b. consumers
c. decomposers

10

They convert sun's energy to food.

a. producers
b. consumers
c. decomposers

11

They rid the biosphere of dead producers and consumers.

a. producers
b. consumers
c. decomposers

12

They release basic chemicals used by producers.

a. producers
b. consumers
c. decomposers

13

Bacteria are:

a. producers
b. consumers
c. decomposers

14

Grasses are:

a. producers
b. consumers
c. decomposers

15

TGT GAMESHEET: VI.2.1 Food Webs

In food chains, there would be more food available at the:

a. middle of the chain
b. beginning of the chain
c. end of the chain

16

All the possible feeding relationships make up a:

a. food chain
b. food web
c. food nutrient

17

A horse is a:

a. first-order consumer
b. second-order consumer
c. third-order consumer

18

Which must be present for an ecosystem to survive?

a. producers only
b. producers and decomposers
c. carnivores only

19

A consumer that eats both plants and animals is a(n):

a. carnivore
b. herbivore
c. omnivore

20

A consumer that eats plants only is a(n):

a. carnivore
b. herbivore
c. omnivore

21

A consumer that eats animals only is a(n):

a. carnivore
b. herbivore
c. omnivore

22

Human beings are:

a. carnivores
b. herbivores
c. omnivores

23

A tree is a:

a. producer
b. consumer
c. decomposer

24

They contain chlorophyll:

a. producers
b. consumers
c. decomposers

25

CO_2 and nitrates are released by:

a. producers
b. consumers
c. decomposers

26

CO_2 and nitrates are used by:

a. producers
b. consumers
c. decomposers

27

Scavengers assist _______ by feeding on dead animals.

a. producers
b. consumers
c. decomposers

28

Vultures are:

a. consumers
b. scavengers
c. decomposers

29

An animal that eats plants only is a:

a. first-order consumer
b. second-order consumer
c. third-order consumer

30

GAMESHEET ANSWERS

VI.2.1 Food Webs

1. c) second-order consumer
2. b) third-order consumer
3. c) third-order consumer
4. b) first-order consumer
5. b) food chain
6. a) man-woman-fish
7. b) tree-deer-mountain lion
8. a) hawk
9. a) producers
10. b) consumers
11. a) producers
12. c) decomposers
13. b) consumers and
    c) decomposers
14. c) decomposers
15. a) producers
16. b) beginning of the chain
17. b) food web
18. a) first-order consumer
19. b) producers and decomposers
20. c) omnivore
21. b) herbivore
22. a) carnivore
23. c) omnivores
24. a) producer
25. a) producers
26. b) consumers
27. a) producers
28. c) decomposers
29. b) scavengers
30. a) first-order consumer

TGT LIFE SCIENCE

UNIT: Ecology

WORKSHEET: Interactions in the Ecosystem

Objective: VI.2.2--Students will identify harmful and/or helpful interactions in the ecosystem.

Instructions: This worksheet will help you prepare for the Interactions in the Ecosystem Game. Study the vocabulary and define each term before beginning the game. For items 1-20, choose the term which best describes the interaction; for items 21-30, choose the term that best describes the underlined organism.

Vocabulary:

commensalism
host
mutualism
parasite
parasitism
predation
predator
prey

TGT WORKSHEET: VI.2.2 Interactions in the Ecosystem

Interaction	Description	Example
Commensalism	The relationship in which one organism (commensal) benefits from another organism (host) without affecting the other organism.	A remora fish attaches itself to the belly of a shark. The shark provides the ride and the remora feeds on the leftovers of the shark's meal.
Mutualism	The relationship in which two organisms live in a mutual and usually necessary association.	In lichens, the alga produces the food for itself and the fungus. The fungus provides moisture and protection.
Parasitism	The relationship in which one organism (parasite) is completely dependent on a host organism. The host is usually harmed.	The plasmodium (protozoa) gets its food from the humans in which it lives and causes the disease called malaria.
Predation	The feeding of one organism upon another.	A wolf kills a deer and feeds on it.

TGT WORKSHEET: VI.2.2 Interactions in the Ecosystem

lichen

a. commensalism
b. mutualism
c. parasitism
d. predation

1

cat-fleas

a. commensalism
b. mutualism
c. parasitism
d. predation

2

hawk-rabbit

a. commensalism
b. mutualism
c. parasitism
d. predation

3

rhinoceros-tickbird

a. commensalism
b. mutualism
c. parasitism
d. predation

4

shark-remora fish

a. commensalism
b. mutualism
c. parasitism
d. predation

5

insect-flowering plant

a. commensalism
b. mutualism
c. parasitism
d. predation

6

wolf-deer

a. commensalism
b. mutualism
c. parasitism
d. predation

7

human-lice

a. commensalism
b. mutualism
c. parasitism
d. predation

8

termite-protozoa

a. commensalism
b. mutualism
c. parasitism
d. predation

9

Spanish moss-oak tree

a. commensalism
b. mutualism
c. parasitism
d. predation

10

crocodile-crocodile bird

a. commensalism
b. mutualism
c. parasitism
d. predation

11

fungus-wheat

a. commensalism
b. mutualism
c. parasitism
d. predation

12

plasmodium (protozoa)-human

a. commensalism
b. mutualism
c. parasitism
d. predation

13

orchid-trees

a. commensalism
b. mutualism
c. parasitism
d. predation

14

bear-fish

a. commensalism
b. mutualism
c. parasitism
d. predation

15

TGT WORKSHEET: VI.2.2 Interactions in the Ecosystem

dog-tick

a. commensalism
b. mutualism
c. parasitism
d. predation

16

snake-mouse

a. commensalism
b. mutualism
c. parasitism
d. predation

17

whale-barnacles

a. commensalism
b. mutualism
c. parasitism
d. predation

18

nitrogen fixing bacteria-legumes

a. commensalism
b. mutualism
c. parasitism
d. predation

19

viruses-human

a. commensalism
b. mutualism
c. parasitism
d. predation

20

Mountain lion-deer

a. host
b. parasite
c. predator
d. prey

21

mistletoe-oak tree

a. host
b. parasite
c. predator
d. prey

22

tick-humans

a. host
b. parasite
c. predator
d. prey

23

owl-mice

a. host
b. parasite
c. predator
d. prey

24

snake-hawk

a. host
b. parasite
c. predator
d. prey

25

fox-rabbit

a. host
b. parasite
c. predator
d. prey

26

cat-mite

a. host
b. parasite
c. predator
d. prey

27

hookworm-humans

a. host
b. parasite
c. predator
d. prey

28

jelly fish-shrimp

a. host
b. parasite
c. predator
d. prey

29

corn-corn smut

a. host
b. parasite
c. predator
d. prey

30

WORKSHEET ANSWERS

VI.2.2 Interactions in the Ecosystem

1. b) mutualism
2. c) parasitism
3. d) predation
4. b) mutualism
5. a) commensalism
6. b) mutualism
7. d) predation
8. c) parasitism
9. b) mutualism
10. a) commensalism
11. b) mutualism
12. c) parasitism
13. c) parasitism
14. a) commensalism
15. d) predation
16. c) parasitism
17. d) predation
18. a) commensalism
19. b) mutualism
20. c) parasitism
21. d) predator
22. b) parasite
23. a) host
24. d) prey
25. d) prey
26. c) predator
27. a) host
28. a) host
29. d) prey
30. b) parasite

TGT GAMESHEET: VI.2.2 Interactions in the Ecosystem

lichen

a. commensalism
b. mutualism
c. parasitism
d. predation

1

rhinoceros-tickbird

a. commensalism
b. mutualism
c. parasitism
d. predation

2

wolf-deer

a. commensalism
b. mutualism
c. parasitism
d. predation

3

Spanish moss-oak tree

a. commensalism
b. mutualism
c. parasitism
d. predation

4

plasmodium (protozoa)-human

a. commensalism
b. mutualism
c. parasitism
d. predation

5

dog-tick

a. commensalism
b. mutualism
c. parasitism
d. predation

6

cat-fleas

a. commensalism
b. mutualism
c. parasitism
d. predation

7

shark-remora fish

a. commensalism
b. mutualism
c. parasitism
d. predation

8

human-lice

a. commensalism
b. mutualism
c. parasitism
d. predation

9

crocodile-crocodile bird

a. commensalism
b. mutualism
c. parasitism
d. predation

10

orchid-trees

a. commensalism
b. mutualism
c. parasitism
d. predation

11

snake-mouse

a. commensalism
b. mutualism
c. parasitism
d. predation

12

hawk-rabbit

a. commensalism
b. mutualism
c. parasitism
d. predation

13

insect-flowering plant

a. commensalism
b. mutualism
c. parasitism
d. predation

14

termite-protozoa

a. commensalism
b. mutualism
c. parasitism
d. predation

15

TGT GAMESHEET: VI.2.2 Interactions in the Ecosystem

fungus-wheat

a. commensalism
b. mutualism
c. parasitism
d. predation

16

bear-fish

a. commensalism
b. mutualism
c. parasitism
d. predation

17

whale-barnacles

a. commensalism
b. mutualism
c. parasitism
d. predation

18

hermit crab-sea anemones

a. commensalism
b. mutualism
c. parasitism
d. predation

19

shrimp-jellyfish

a. commensalism
b. mutualism
c. parasitism
d. predation

20

slime mold-cabbage plant

a. commensalism
b. mutualism
c. parasitism
d. predation

21

nitrogen fixing bacteria-legumes

a. commensalism
b. mutualism
c. parasitism
d. predation

22

viruses-human

a. commensalism
b. mutualism
c. parasitism
d. predation

23

To a deer, a mountain lion is a

a. host
b. parasite
c. predator
d. prey

24

To an oak tree, misteltoe is a

a. host
b. parasite
c. predator
d. prey

25

To a tick, a human is a

a. host
b. parasite
c. predator
d. prey

26

To an owl, a mouse is a

a. host
b. parasite
c. predator
d. prey

27

To a cat, a mite is a

a. host
b. parasite
c. predator
d. prey

28

To a snake, a hawk is a

a. host
b. parasite
c. predator
d. prey

29

To a human, a tapeworm is a

a. host
b. parasite
c. predator
d. prey

30

GAMESHEET ANSWERS

VI.2.2 Interactions in the Ecosystem

1. b) mutualism
2. b) mutualism
3. d) predation
4. a) commensalism
5. c) parasitism
6. c) parasitism
7. c) parasitism
8. a) commensalism
9. c) parasitism
10. b) mutualism
11. a) commensalism
12. d) predation
13. d) predation
14. b) mutualism
15. b) mutualism
16. c) parasitism
17. d) predation
18. a) commensalism
19. b) mutualism
20. d) predation
21. c) parasitism
22. b) mutualism
23. c) parasitism
24. c) predator
25. b) parasite
26. a) host
27. d) prey
28. b) parasite
29. c) predator
30. b) parasite

TGT LIFE SCIENCE

UNIT: Ecology

WORKSHEET: Identifying Elements of Cycles

Objective: VI.3.1--Students will identify the cycle to which each process is most closely related.

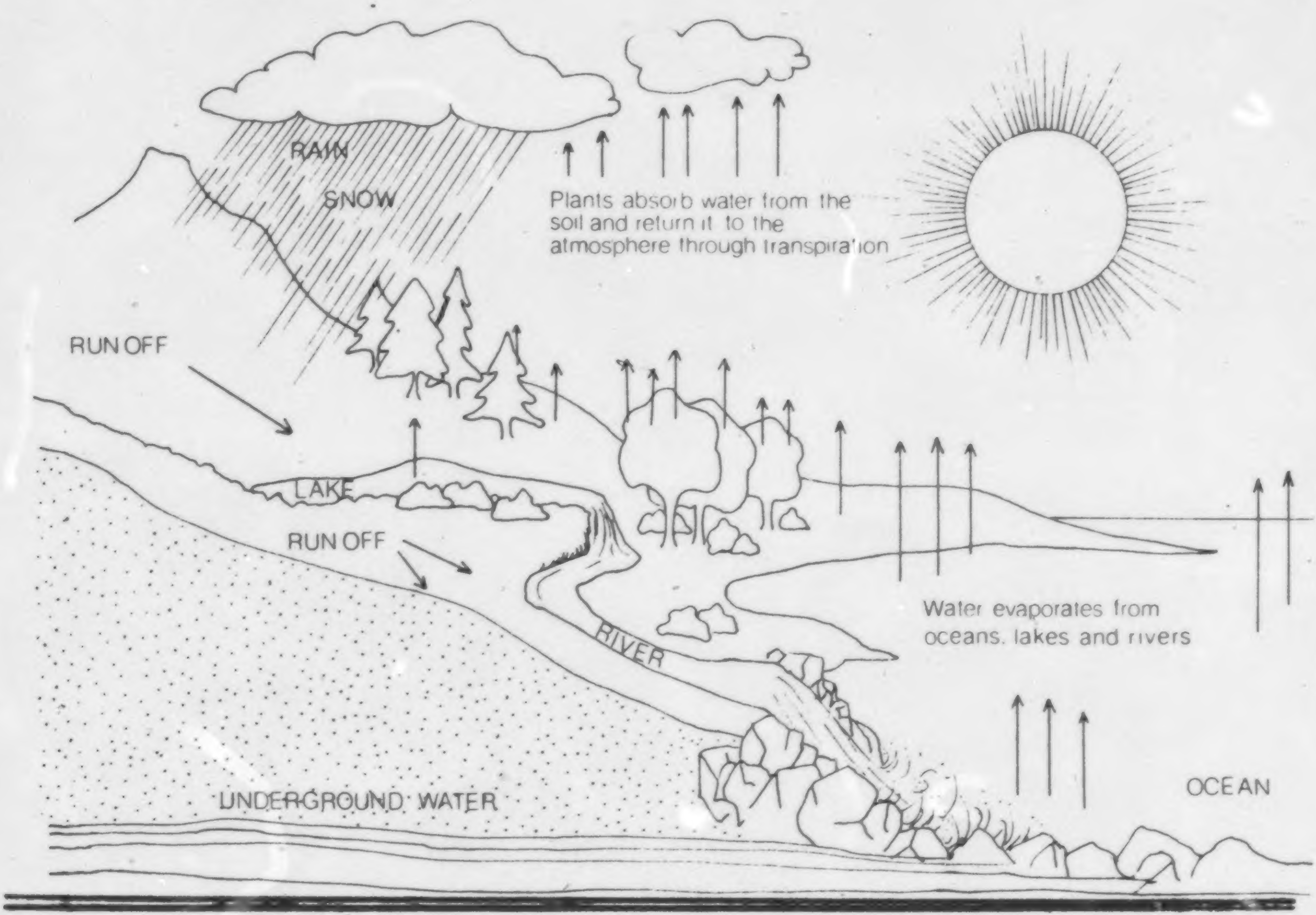
Instructions: This worksheet will help you prepare for the Identifying Elements of Cycles Game. Study the diagrams of the water cycle, carbon dioxide-oxygen cycle, and nutrient (nitrogen) cycle. For each item on the worksheet, choose the correct cycle or cycles that the item is an element of.

Vocabulary:

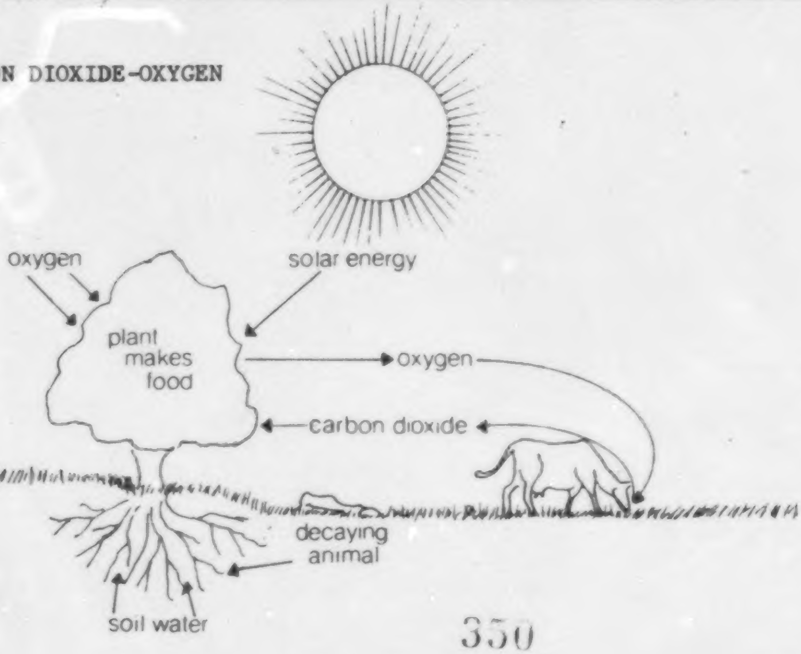
carbon dioxide-oxygen cycle
nutrient (nitrogen) cycle
water cycle

TGT WORKSHEET: VI.3.1 Identifying Elements of Cycles

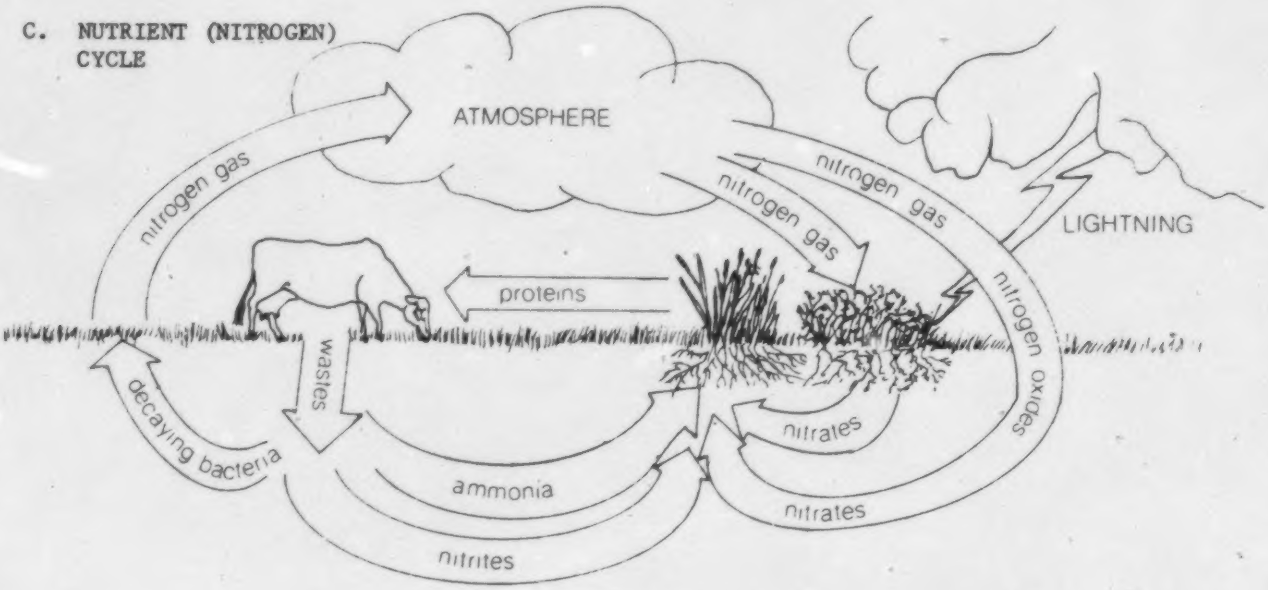
A. THE WATER CYCLE


RAIN
SNOW
Plants absorb water from the soil and return it to the atmosphere through transpiration
RUN OFF
LAKE
RUN OFF
RIVER
Water evaporates from oceans, lakes and rivers
UNDERGROUND WATER
OCEAN

B. THE CARBON DIOXIDE-OXYGEN CYCLE


oxygen
solar energy
plant makes food
oxygen
carbon dioxide
decaying animal
soil water

C. NUTRIENT (NITROGEN) CYCLE


ATMOSPHERE
nitrogen gas
nitrogen gas
nitrogen gas
LIGHTNING
proteins
nitrogen oxides
wastes
decaying bacteria
nitrates
ammonia
nitrates
nitrites

TGT WORKSHEET: VI.3.1 Identifying Elements of Cycles

water loss from leaves 1	animals 2	oxygen 3
green plants 4	decay bacteria 5	atmosphere 6
water 7	oceans, seas, lakes 8	carbon dioxide 9
sunlight 10	dead plants 11	soil water 12
nitrogen-fixing bacteria 13	rain and snow 14	runoff 15
evaporation 16	the taking in and giving off of gases 17	nitrogen gas 18
clouds 19	food-getting 20	dead animals 21
nitrates 22	energy and carbon dioxide released 23	food-making 24
decay 25	lightning 26	waste material 27
proteins 28		

WORKSHEET ANSWERS

VI.3.1 Identifying Elements of Cycles

1. A; water cycle
2. B, C; carbon dioxide-oxygen, nutrient (nitrogen)
3. B; carbon dioxide-oxygen
4. A, B, C; all three
5. C; nutrient (nitrogen)
6. A, B, C; all three
7. A, B; water, carbon dioxide-oxygen
8. A; water
9. B; carbon dioxide-oxygen
10. A, B; water, carbon dioxide-oxygen
11. C; nutrient (nitrogen)
12. A, B; water, carbon dioxide-oxygen
13. C; nutrient (nitrogen)
14. A; water
15. A; water
16. A; water
17. B; carbon-dioxide-oxygen
18. C; nutrient (nitrogen)
19. A; water
20. B, C; carbon dioxide-oxygen, nutrient (nitrogen)
21. B, C; carbon dioxide-oxygen, nutrient (nitrogen)
22. C; nutrient (nitrogen)
23. B; carbon dioxide-oxygen
24. B; carbon dioxide-oxygen
25. B, C; carbon dioxide-oxygen, nutrient (nitrogen)
26. C; nutrient (nitrogen)
27. B, C; carbon dioxide-oxygen, nutrient (nitrogen)
28. C; nutrient (nitrogen)

TGT GAMESHEET: VI.3.1 Identifying Elements of Cycles

water loss from leaves 1	oceans, seas, lakes 2	runoff 3
green plants 4	dead plants 5	nitrogen gas 6
water 7	rain and snow 8	dead animals 9
sunlight 10	the taking in and giving off of gases 11	food-making 12
nitrogen-fixing bacteria 13	food-getting 14	decay 15
evaporation 16	energy and carbon dioxide released 17	lightning 18
clouds 19	oxygen 20	waste materials 21
nitrates 22	atmosphere 23	protein 24
animals 25	carbon dioxide 26	decay bacteria 27

GAMESHEET ANSWERS

VI.3.1 Identifying Elements of Cycles

1. water
2. water
3. water
4. water, carbon dioxide-oxygen, nutrient (nitrogen)
5. nutrient (nitrogen)
6. nutrient (nitrogen)
7. water, carbon dioxide-oxygen
8. water
9. carbon dioxide-oxygen, nutrient (nitrogen)
10. water, carbon dioxide-oxygen
11. carbon dioxide-oxygen
12. carbon dioxide-oxygen
13. nutrient (nitrogen)
14. carbon dioxide-oxygen, nutrient (nitrogen)
15. carbon dioxide-oxygen, nutrient (nitrogen)
16. water
17. carbon dioxide-oxygen
18. nutrient (nitrogen)
19. water
20. carbon dioxide-oxygen
21. carbon dioxide-oxygen, nutrient (nitrogen)
22. nutrient (nitrogen)
23. water, carbon dioxide-oxygen, nutrient (nitrogen)
24. nutrient (nitrogen)
25. carbon dioxide-oxygen, nutrient (nitrogen)
26. carbon dioxide-oxygen
27. nutrient (nitrogen)

TGT LIFE SCIENCE

UNIT: Ecology

WORKSHEET: Cycle Processes

Objective: VI.3.2--Students will interpret information about the process involved in the water cycle, the carbon dioxide-oxygen cycle, and the nitrogen cycle.

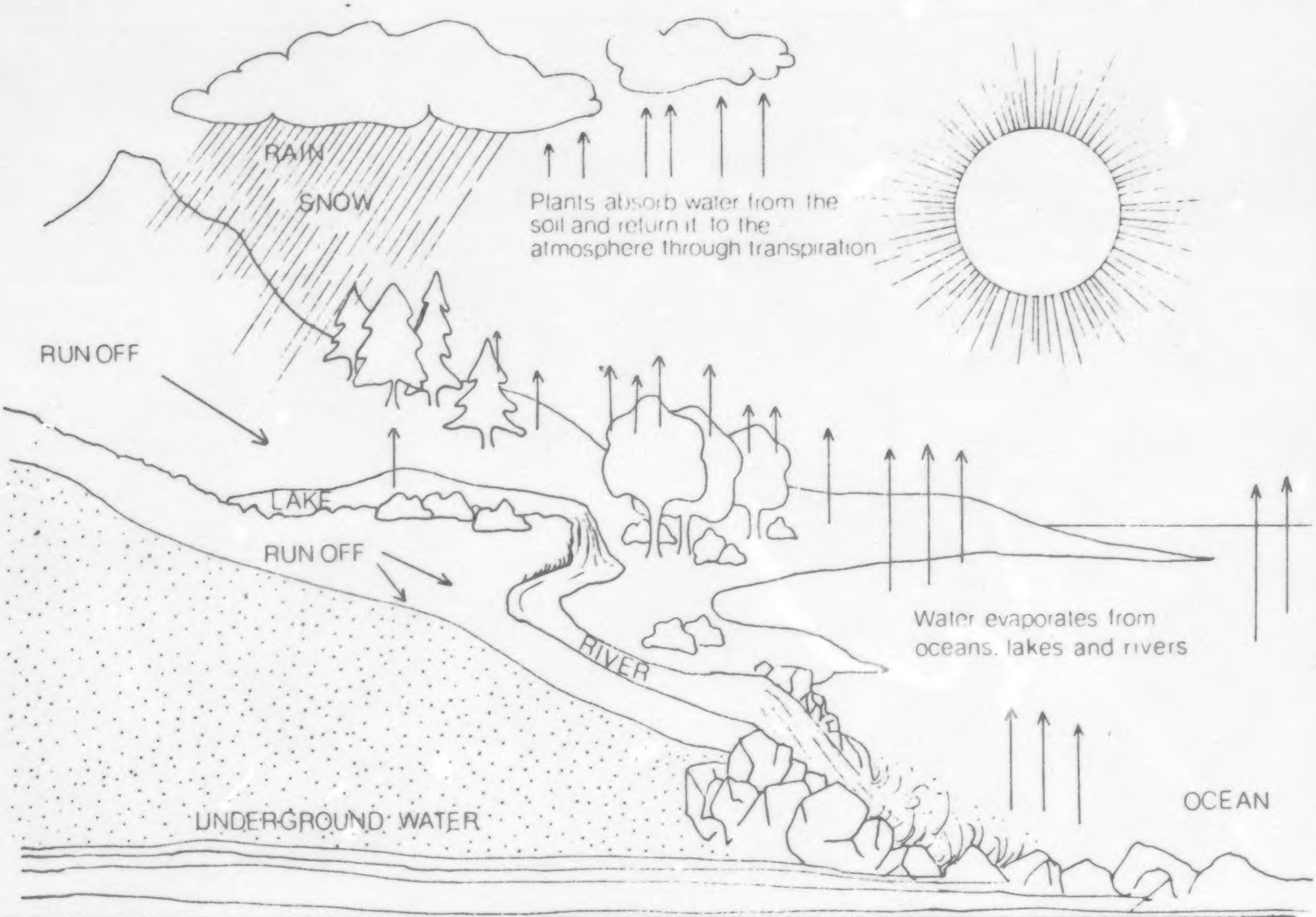
Instructions: This worksheet will help you prepare for the Cycle Processes Game. Study the three cycles carefully before you start the worksheet. Choose the correct answer for each item.

Vocabulary:

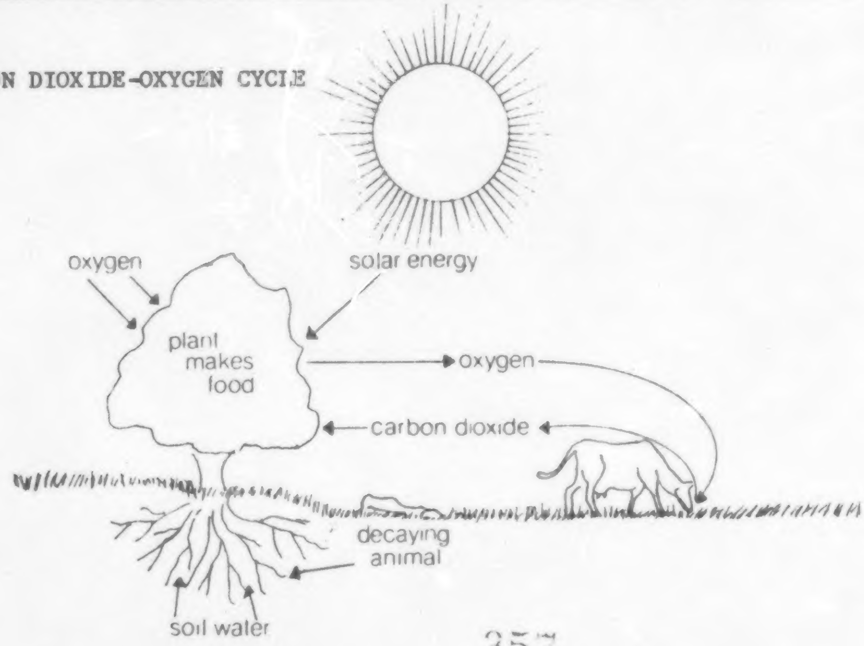
- ammonia
- bacteria
- cycles
- decay
- denitrifying
- evaporation
- nitrate
- nitrite
- nitrogen-fixing
- photosynthesis
- proteins
- recycle
- runoff
- transpiration
- amino acids

TGT WORKSHEET: VI.3.2 Cycle Processes

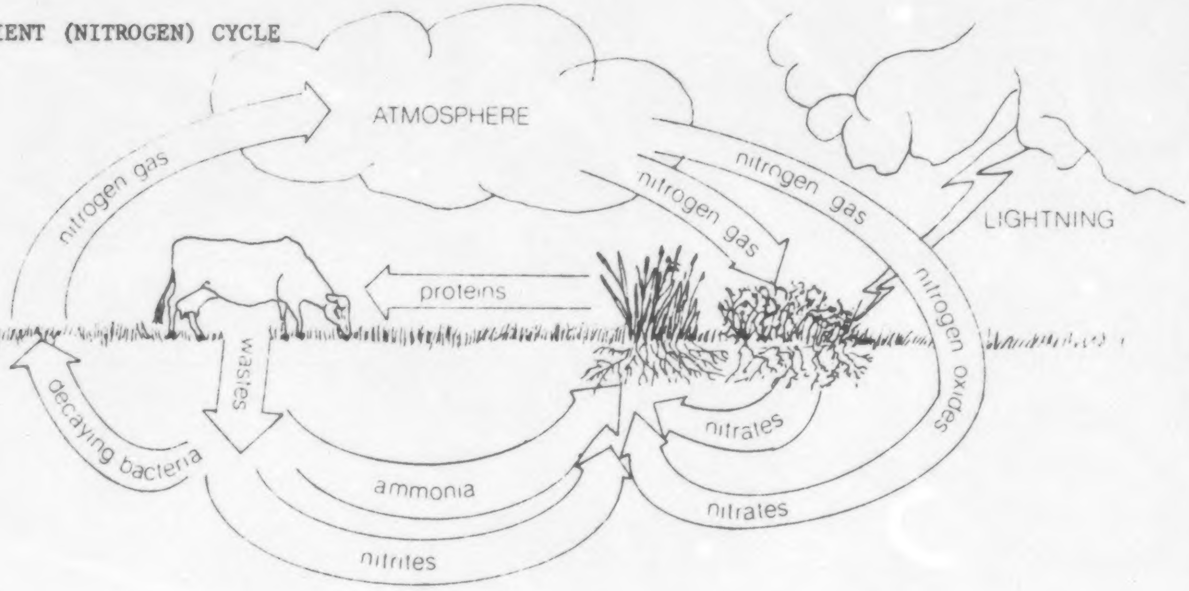
A. THE WATER CYCLE


RAIN
SNOW
Plants absorb water from the soil and return it to the atmosphere through transpiration
RUN OFF
LAKE
RUN OFF
RIVER
Water evaporates from oceans, lakes and rivers
OCEAN
UNDERGROUND WATER

B. THE CARBON DIOXIDE-OXYGEN CYCLE


oxygen
solar energy
plant makes food
oxygen
carbon dioxide
decaying animal
soil water

C. NUTRIENT (NITROGEN) CYCLE


ATMOSPHERE
nitrogen gas
nitrogen gas
nitrogen gas
LIGHTNING
proteins
nitrogen oxides
wastes
decaying bacteria
nitrates
ammonia
nitrates
nitrites

TGT WORKSHEET: VI.3.2 Cycle Processes

Use the water cycle for items 1-10.

The water going over the land to lakes and oceans is called:

a. ground water
b. runoff
c. evaporation
d. snow

1

Water returns to the earth from the atmosphere in the form of:

a. rain
b. runoff
c. snow
d. both a and c

2

The energy needed for water to evaporate comes from:

a. clouds
b. animals
c. plants
d. the sun

3

The process in which water changes from a liquid to a gas is:

a. transpiration
b. evaporation
c. respiration
d. photosynthesis

4

The plant part that releases water to the atmosphere is the:

a. root
b. stem
c. leaf
d. flower

5

The evaporated water comes from:

a. lakes
b. rivers
c. oceans
d. all of the above

6

The water that sinks into the ground is stored as:

a. ground water
b. runoff
c. rain water
d. snow

7

The process in which plants return water to the atmosphere is called:

a. transpiration
b. evaporation
c. respiration
d. photosynthesis

8

The water cycle can operate without the presence of:

a. water
b. living organisms
c. oceans
d. clouds

9

Animals in the water cycle return water to the atmosphere through their:

a. washing
b. drinking water
c. inhaling
d. waste

10

Use the carbon dioxide-oxygen cycle for items 11-15.

The carbon dioxide in the CO_2-O_2 cycle comes from:

a. sunlight
b. animals
c. plants
d. clouds

11

The majority of the oxygen comes from:

a. sunlight
b. animals
c. plants
d. clouds

12

What must green plants obtain from the environment before they can make their own food?

a. carbon dioxide
b. water
c. sunlight
d. all of the above

13

The energy that green plants need to carry on photosynthesis comes from:

a. the sun
b. animals
c. plants
d. clouds

14

If all the plants would suddenly die, the animals:

a. could still live forever
b. would die
c. could use the oceans as a source of O_2
d. none of the above

15

TGT WORKSHEET: VI.3.2 Cycle Processes

Use the nitrogen cycle for items 16-25.

What caused the plant and animal to decay?

a. nitrogen
b. bacteria
c. dropping
d. nutrients

16

Nitrogen-fixing bacteria change nitrogen (N_2) to:

a. nitrites
b. nitrates
c. nitrogen gas
d. carbon dioxide

17

Which form of nitrogen can plants use?

a. nitrates
b. nitrogen gas
c. nitrites
d. nutrients

18

Animals obtain nitrogen compounds they need from:

a. the soil
b. bacteria
c. decaying organisms
d. green plants

19

All of the following are part of the nitrogen cycle except:

a. nitrogen-fixing bacteria
b. carbon dioxide
c. green plants
d. decay bacteria

20

The small amount of nitrogen not used by plants:

a. remains in the soil
b. is used by animals
c. returns to the atmosphere
d. is found in the oceans

21

The waste products of organisms:

a. have no use
b. remain in the soil
c. are recycled to be used by other organisms
d. cause other organisms to die

22

The bacteria that do not change waste or nitrogen gas to a useful form are:

a. decay bacteria
b. nitrogen-fixing bacteria
c. nitrite bacteria
d. denitrifying bacteria

23

Lightning is:

a. beneficial to the nitrogen cycle
b. harmful to the nitrogen cycle
c. not a part of the nitrogen cycle

24

The nitrogen, water and CO_2-O_2 cycles are all:

a. at work in aquaria
b. at work in terrania
c. not at work in either
d. at work in both

25

WORKSHEET ANSWERS

VI.3.2 Cycle Processes

1. b) runoff
2. d) both a and c
3. d) the sun
4. b) evaporation
5. c) leaf
6. d) all of the above
7. a) ground water
8. a) transpiration
9. b) living organisms
10. d) waste
11. b) animals
12. c) plants
13. d) all of the above
14. a) the sun
15. b) would die
16. b) bacteria
17. b) nitrates
18. a) nitrates
19. d) green plants
20. b) carbon dioxide
21. c) returns to the atmosphere
22. c) are recycled to be used by other organisms
23. d) denitrifying bacteria
24. a) beneficial to the nitrogen cycle
25. d) at work in both

TGT GAMESHEET: VI.3.2 Cycle Processes

Use the water cycle for items 1-10.

The water cycle can operate without the presence of:

a. water
b. living organisms
c. oceans
d. clouds

1

Animals in the water cycle return water to the atmosphere through their:

a. washing
b. drinking water
c. inhaling
d. waste

2

The evaporated water comes from:

a. lakes
b. rivers
c. oceans
d. all of the above

3

The water that sinks into the ground is stored as:

a. ground water
b. runoff
c. rain water
d. snow

4

The process in which plants return water to the atmosphere is called:

a. transpiration
b. evaporation
c. respiration
d. photosynthesis

5

The energy needed for water to evaporate comes from:

a. clouds
b. animals
c. plants
d. the sun

6

The process in which water changes from a liquid to a gas is:

a. transpiration
b. evaporation
c. respiration
d. photosynthesis

7

The plant part that releases water to the atmosphere is the:

a. root
b. stem
c. leaf
d. flower

8

The water going over the land to lakes and oceans is called:

a. ground water
b. runoff
c. evaporation
d. snow

9

Water returns to the earth from the atmosphere in the form of:

a. rain
b. runoff
c. snow
d. both a and c

10

Use the carbon dioxide-oxygen cycle for items 11-15.

The energy that green plants need to carry on photosynthesis comes from:

a. the sun
b. animals
c. plants
d. clouds

11

If all the plants would suddenly die, the animals:

a. could still live forever
b. would die
c. could use the oceans as a source of O_2
d. none of the above

12

The carbon dioxide in the CO_2-O_2 cycle comes from:

a. sunlight
b. animals
c. plants
d. clouds

13

The majority of oxygen comes from:

a. sunlight
b. animals
c. plants
d. clouds

14

What must green plants obtain from the environment before they can make their own food?

a. carbon dioxide
b. water
c. sunlight
d. all of the above

15

TGT GAMESHEET: VI.3.2 Cycle Processes

Use the nitrogen cycle for items 16-25.

The waste products of organisms:

a. have no use
b. remain in the soil
c. are recycled to be used by other organisms
d. cause other organisms to die 16

The bacteria that do not change waste or nitrogen gas to a useful form are:

a. decay bacteria
b. nitrogen-fixing bacteria
c. nitrite bacteria
d. denitrifying bacteria 17

Animals obtain nitrogen compounds they need from:

a. the soil
b. bacteria
c. decaying organisms
d. green plants 18

All of the following are part of the nitrogen cycle except:

a. nitrogen-fixing bacteria
b. carbon dioxide
c. green plants
d. decay bacteria 19

The small amount of nitrogen not used by plants:

a. remains in the soil
b. is used by animals
c. returns to the atmosphere
d. is found in the oceans 20

What caused the plant and animal to decay?

a. nitrogen
b. bacteria
c. dropping
d. nutrients 21

Nitrogen-fixing bacteria change nitrogen (N_2) to:

a. nitrites
b. nitrates
c. nitrogen gas
d. carbon dioxide 22

Which form of nitrogen can plants use?

a. nitrates
b. nitrogen gas
c. nitrites
d. nutrients 23

Lightning is:

a. beneficial to the nitrogen cycle
b. harmful to the nitrogen cycle
c. not a part of the nitrogen cycle 24

GAMESHEET ANSWERS

VI.3.2 Cycle Processes

1. b) living organisms
2. d) waste
3. d) all of the above
4. a) ground water
5. a) transpiration
6. d) the sun
7. b) evaporation
8. c) leaf
9. b) runoff
10. d) both a and c
11. a) the sun
12. b) would die
13. b) animals
14. c) plants
15. d) all of the above
16. c) are recycled to be used by other organisms
17. d) denitrifying bacteria
18. d) green plants
19. b) carbon dioxide
20. c) returns to the atmosphere
21. b) bacteria
22. b) nitrates
23. a) nitrates
24. a) beneficial to the nitrogen cycle

TGT LIFE SCIENCE

UNIT: Careers

WORKSHEET: Biology-Related Careers

Objective: VII.1--Students will identify various biology-related careers from a brief description and/or the minimum training requirements.

Instructions: This worksheet will help you prepare for the Biology-Related Careers Game. Study the chart with the job description and the minimum training requirements for each occupation. Choose the job which best fits each item. The tournament will be played without the chart.

Biology-Related Careers

Careers in biology-related fields are many and varied. Requirements for some jobs in these fields may consist only of on-the-job training. Others may consist of seven or eight years of formal college training plus on-the-job training.

Below is a list of just a few of the jobs open in biology-related fields. This list includes brief job descriptions and minimum training requirements. These may vary somewhat from place to place. You will want to check with local companies, schools and professional groups for details.

Training and Education Key

Job = On-the-job training
HS = High school diploma
VoTech = Vocational or technical school
JC = Junior college (2 year)
BS = Bachelor of Science degree
MS = Master of Science degree
Int = Internship required

Life Science Occupations

Life sciences are often divided into three broad areas--agriculture, biology, and medicine. Life scientists perform research to learn facts. They also solve practical problems and teach. Improved plants, new drugs, and a better quality of life are some of the results of the work of life scientists.

Career	Training	Job Description
Biochemist	BS	studies substances such as food and drugs and their changes
Biomedical engineer	BS	applies engineering technology to medical and health problems
Farmer	Job, VoTech, BS	cultivates land, raises crops and/or livestock
Geneticist	BS	studies heredity and develops new strains, breeds, or varieties of plants and animals
Horticulturalist	BS	raises and improves flowers, fruits, vegetables, and decorative plants
Microbiologist	BS	studies microscopic organisms
Science teacher	BS	instructs students at elementary, secondary, or college level about general or specific areas of science
Soil scientist (Agronomist)	BS	studies biological, chemical, and physical properties of soil

Conservation and Environmental Occupations

In our ecology-minded society, persons in these occupations help us live within our physical environment. Some help protect, develop, and manage our forests, rangelands, wildlife, soil, and water. Others study our surroundings in order to improve the quality of life on the earth. All play an important role in solving environmental pollution problems.

Career	Training	Job Description
Environmental health specialist	BS	environmental health specialist helps ensure health and safety of food, water, and air
Forester	BS	manages, protects, and develops forests
Forestry technician	VoTech	aids forester, prevents and controls fires, supervises wood-cutting operations
Geologist	MS	studies composition, structure and history of the earth's crust
Geophysicist	BS	studies chemical and physical characteristics of the earth and other planets
Marine Biologist	BS	studies the plants and animals that live in the ocean
Meteorologist	BS	studies atmosphere and its effects, forecasts weather
Oceanographer	BS	studies physical, chemical, and biological aspects of oceans
Range Manager	BS	manages and develops rangelands and wildlife
Soil Conservationist	BS	supplies technical assistance to farmers and others for conservation and improvement of soil

TGT WORKSHEET: VII.1 Biology-Related Careers

Studies heredity and develops new strains, breeds, or varieties of plants and animals. 1	Manages, protects and develops forests. 2	Studies the chemical and physical characteristics of the earth and other planets. 3
Supplies technical assistance to farmers and others for conservation and improvement of soil. 4	Cultivates land, raises crops and/or livestock. 5	Studies composition, structure, and history of the earth's crust. 6
Raises and improves fruits, flowers, vegetables and decorative plants. 7	Studies the physical, chemical and biological aspects of oceans. 8	Studies microscopic organisms. 9
Manages and develops rangelands and wildlife. 10	Studies biological, chemical and physical properties of soil. 11	Studies substances such as foods and drugs and their changes. 12
Applies engineering technology to medical and health problems. 13	Instructs students at elementary, secondary or college level about general or specific areas of science. 14	Studies the atmosphere and its effects; forecasts weather. 15
Studies the plants and animals that live in the ocean. 16	Helps to ensure health and safety of food, water, and air. 17	Aids foresters in preventing and controlling fires and supervises wood-cutting operations. 18

WORKSHEET ANSWERS

VII.1 Biology-Related Careers

1. geneticist
2. forester
3. geophysicist
4. soil conservationist
5. farmer
6. geologist
7. horticulturalist
8. oceanographer
9. microbiologist
10. range manager
11. soil scientist
12. biochemist
13. biomedical engineer
14. science teacher
15. meteorologist
16. marine biologist
17. environmental health specialist
18. forestry technician

TGT GAMESHEET: VII.1 Biology-Related Careers

Raises and improves fruits, flowers, vegetables and decorative plants. 1	Studies the physical, chemical and biological aspects of oceans. 2	Studies microscopic organisms. 3
Manages and develops rangelands and wildlife. 4	Studies biological, chemical and physical properties of soil. 5	Studies substances such as food and drugs and their changes. 6
Studies the atmosphers and its effects; forecasts weather. 7	Applies engineering technology to medical and health problems. 8	Instructs students at elementary, secondary or college level about general or specific areas of science. 9
Aids foresters in preventing and controlling fires and supervises wood-cutting operations. 10	Studies the plants and animals that live in the ocean. 11	Helps to ensure health and safety of food, water, and air. 12
Studies heredity and develops new strains, breeds, or varieties of plants and animals. 13	Manages, protects and develops forests. 14	Studies the chemical and physical characteristics of the earth and other planets. 15
Supplies technical assistance to farmers and others for conservation and improvement of soil. 16	Cultivates land, raises crops and/or livestock. 17	Studies composition, structure, and history of the earth's crust. 18

GAMESHEET ANSWERS

VII.1 Biology-Related Careers

1. horticulturalist
2. oceanographer
3. microbiologist
4. range manager
5. soil scientist
6. biochemist
7. meteorologist
8. biomedical engineer
9. science teacher
10. forestry technician
11. marine biologist
12. environmental health specialist
13. geneticist
14. forester
15. geophysicist
16. soil conservationist
17. farmer
18. geologist

TGT LIFE SCIENCE

UNIT: Careers

WORKSHEET: Health Careers

Objective: VII.2--Students will identify health occupations from a brief description and/or the minimum training requirements.

Instructions: This worksheet will help you prepare for the Health Careers Game. Study the chart with the job descriptions and the minimum training requirements. Choose the occupation which best fits each item. The game will be played without the chart.

TGT WORKSHEET: VII.2 Health Careers

Health Careers

Careers in health fields are many and varied. Requirements for some jobs in these fields may consist only of on-the-job training. Others may consist of seven or eight years of formal college training plus on-the-job training.

Below is a list of just a few of the jobs open in health fields. This list includes brief job descriptions and minimum training requirements. These may vary somewhat from place to place. You will want to check with local companies, schools, and professional groups for details.

Training and Education Key

Job = On-the-job training
HS = High school diploma
VoTech = Vocational or technical school
JC = Junior college (2 year)
BS = Bachelor of Science degree
MS = Master of Science degree
Int = Internship required

Health Occupations

Career	Training	Job Description
Dentistry		
Dental assistant	Job, VoTech	prepares patients; helps dentist
Dental hygienist	Graduate of dental hygiene school (2-4 year)	cleans teeth, gives oral hygiene instruction
Dental laboratory technician	Job	prepares dentures, inlays, and dental appliances
Dentist	Doctor of Dental Surgery degree (DDS) (6 year)	examines and treats people with tooth related problems
Medical Practitioners		
Chiropractor	Doctor of Chiropractic degree (DC) (4 year)	treats human patients by manual manipulation of body parts; cannot prescribe medication.
Ophthalmologist	Doctor of Optometry degree (6 year)	examines eyes for vision problems and disease
Pediatrician	Doctor of Pediatric Medicine (MD) (7 year plus Int)	specializes in the care and treatment of children
Physician	Doctor of Medicine degree (7 year plus Int)	examines, diagnoses, and treats human disease and injury; often specialized
Podiatrist	Doctor of Podiatric Medicine degree (DPM) (6 year)	treats foot injury and disease

Health Careers (con't.)

Career	Training	Job Description
Psychiatrist	Doctor of Psychiatric Medicine (MD) (7 year plus Int)	treats emotional and mental disease
Veterinarian	Doctor of Veterinary Medicine (DVM) (6 year)	diagnoses and treats animal disease and injury
Nursing		
Licensed practical nurse	HS, training (1 year)	provides nursing care to sick or injured patients
Nursing assistant	Job	serves meals; provides for patient comfort; frees registered nurse and licensed practical nurse for critical work
Registered nurse (RN)	Graduate of school of nursing (2-5 year)	gives medication ordered by physician; observes patient symptoms and progress; supervises nursing assistants; teaches
Other		
Dietician	BS	plans nutritious meals, supervises food service workers
Food technologist	BS	investigates nature of foods and applies this to processing, packaging, and storage of food
Medical assistant (paramedic)	Job, VoTech	helps physician examine and treat patients; does clerical work
Medical lab worker	Job	works in laboratory performing various medical tests; responsibility and test complexity depend on training and experience
assistant	Job	
technician	College (2 year)	
technologist	College (4 year)	
Pharmacist	Graduate of college of pharmacy (5 year plus Int)	dispenses drugs and medicines prescribed by medical practitioners
Physical therapist	Graduate of school of physical therapy (4 year)	provides training and helps rehabilitate persons with muscle, bone, and nerve disease or injury
Physical therapy aide	Job, JC	assists physical therapist

TGT WORKSHEET: VII.2 Health Careers

Examines, diagnoses, and treats human disease and injury. 1	Plans nutritious meals and supervises food service workers. 2	Serves meals; provides for patient comfort and frees nurses for more clinical work. 3
Cleans teeth and gives oral hygiene instruction. 4	Dispenses drugs and medicine prescribed by medical practitioners. 5	Helps the physician examine and treat patients and does some clerical work. 6
Treats human patients by the manual movement of body parts. This person cannot prescribe medication. 7	A physician who specializes in the treatment of vision problems and diseases. 8	Diagnoses and treats animal diseases and injuries. 9
Provides nursing care to sick or injured patients. 10	Provides training and helps rehabilitate persons with muscle, bone and nerve injuries or diseases. 11	Prepares dentures and dental appliances. 12
Gives medication ordered by physicians, observes patient symptoms and progress, and supervises nursing assistants. 13	Treats foot injuries and diseases. 14	Prepares patients and helps the dentist. 15
Works in laboratories performing various medical tests. 16	Assists the physical therapist. 17	Examines and treats people with tooth related problems. 18
An expert in the grinding of lenses and the fitting of glasses. 19	A physician who specializes in the care of children. 20	A physician who treats emotional and mental diseases. 21
A dental job requiring 2-4 years of college. 22	A medical lab worker who requires 2 years of college. 23	Requires 5 years of college and an internship. 24
Requires 6 years of schooling and DVM degree. 25	A dental job requiring on-the-job training or VoTech training. 26	A nursing job requiring a BS in most states. 27
A foods job requiring a BS degree. 28	A medical lab worker requiring on-the-job training. 29	Requires 7 years of college plus an internship. 30

WORKSHEET ANSWERS

VII.2 Health Careers

1. physician
2. dietician
3. nursing assistant
4. dental hygienist
5. pharmacist
6. medical assistant
7. chiropractor
8. ophthalmologist
9. veterinarian
10. LPN (licensed practical nurse)
11. physical therapist
12. dental laboratory technician
13. registered nurse (RN)
14. podiatrist
15. dental assistant
16. medical lab worker
17. physical therapy aide
18. dentist
19. optician
20. pediatrician
21. psychiatrist
22. dental hygienist
23. medical technician
24. pharmacist
25. veterinarian
26. dental assistant
27. registered nurse
28. dietician
29. medical assistant
30. physician

TGT GAMESHEET: VII.2 Health Careers

Treats human patients by the manual movement of body parts. This person cannot prescribe medication. 1	Assists the physical therapist. 2	A dental job requiring 2-4 years of college. 3
A physician who specializes in the treatment of vision problems and diseases. 4	Works in laboratories performing various medical tests. 5	A physician who treats emotional and mental diseases. 6
Diagnoses and treats animal diseases and injuries. 7	Prepares patients and helps the dentist. 8	A physician who specializes in the care of children. 9
Helps the physician examine and treat patients and does some clerical work. 10	Treats foot injuries and diseases. 11	An expert in the grinding of lenses and the fitting of glasses. 12
Dispenses drugs and medicines prescribed by medical practitioners. 13	Gives medication ordered by physicians, observes patient symptoms and progress, and supervises nursing assistants. 14	Requires 7 years of college plus an internship. 15
Cleans teeth and gives oral hygiene instruction. 16	Prepares dentures and dental appliances. 17	A medical lab worker requiring on-the-job training. 18
Serves meals; provides for patient comfort and frees nurses for more clinical work. 19	Provides training and helps rehabilitate persons with bone, muscle and nerve injuries or diseases. 20	A food job requiring a BS degree. 21
Plans nutritious meals and supervises food service workers. 22	Provides nursing care to sick or injured patients. 23	A nursing job requiring a BS degree in most states. 24
Examines, diagnoses, and treats human disease and injury. 25	Requires 5 years of college and an internship. 26	A dental job requiring on-the-job training or VoTech training. 27
Examines and treats people with tooth related problems. 28	A medical lab worker who has to have 2 years of college. 29	Requires 6 years of schooling and a DVM degree. 30

GAMESHEET ANSWERS

VII.2 Health Careers

1. chiropractor
2. physical therapist aide
3. dental hygienist
4. ophthalmologist
5. medical lab worker
6. psychiatrist
7. veterinarian
8. dental assistant
9. pediatrician
10. medical assistant
11. podiatrist
12. optician
13. pharmacist
14. registered nurse (RN)
15. physician
16. dental hygienist
17. dental laboratory technician
18. medical assistant
19. nursing assistant
20. physical therapist
21. dietician
22. dietician
23. licensed practical nurse (LPN)
24. registered nurse (RN)
25. physician
26. pharmacist
27. dental assistant
28. dentist
29. medical technician
30. veterinarian